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CREATING STRONG SCHOOLS & COMMUNITIES

Mentoring Early Career Teachers in Urban Alaska

Impact Findings from the Investing in Innovation (i3) Evaluation of the Alaska Statewide Mentor Project Urban Growth Opportunity

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About This Report

This report presents an in-depth discussion of findings from Education Northwest's research on the Alaska Statewide Mentor Project's Urban Growth Opportunity model, which was funded by a federal Investing in Innovation (i3) validation grant (U411B110072). The model provided fully released, highly skilled teachers to serve as mentors to early career teachers for their first two years in the profession. Using a randomized controlled trial design, researchers at Education Northwest examined the impact and implementation of the Urban Growth Opportunity as it supported early career teachers in five urban Alaska school districts. The purpose of the study was to examine the effects of early career teachers' participation in the program on three outcomes: their retention as a teacher in Alaska, their instructional practice, and the academic performance of their students.

Founded as a nonprofit corporation in 1966, Education Northwest builds capacity in schools, families, and communities through applied research and development. Education Northwest upholds professional standards in conducting and reporting research. Findings reported to the National Evaluation of i3 were not subject to the approval of Alaska Statewide Mentor Project, the University of Alaska Fairbanks (the grantee), the state, or other collaborating agencies. Education Northwest independently conducted all key aspects of the evaluation, including random assignment, collection of student assessment data, the impact analyses, implementation and intervention studies, and the reporting of study findings. Neither the grantee nor the intervention developer analyzed outcomes data for any confirmatory contrast. Neither the grantee nor the intervention developer reported findings (i.e., impact estimates and standard errors) to the National Evaluation of i3 for any confirmatory contrast.

On the cover: View of Lake Lucille, Alaska from a mentor training site at Best Western Lake Lucille Inn. *Photo by Phyllis Campbell Ault*

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Suggested Citation

Ault, P. C., Roccograndi, A., & Burke, A. (2017). *Mentoring early career teachers in urban Alaska: Impact findings from the Investing in Innovation (i3) evaluation of the Alaska Statewide Mentor Project Urban Growth Opportunity*. Portland, OR: Education Northwest.

Executive Summary

Since 2004 the Alaska Department of Education and Early Development (AK DEED) has operated the Alaska Statewide Mentor Project (ASMP) as a professional development initiative primarily for rural early career teachers (ECTs) in the state's high-needs districts. The initiative provides ECTs with two years of support from fully released, highly trained mentors.

In 2011 the University of Alaska Fairbanks (UAF) received an Investing in Innovation (i3) grant from the U.S. Department of Education (DOE) to conduct a validation study of ASMP's Urban Growth Opportunity (UGO) program, which adapts the ASMP model for ECTs in urban areas. The i3 study was designed to validate the effectiveness of the ASMP model as implemented in five urban areas of Alaska. This final report of the overall validation study looks at three interrelated aspects of UGO: implementation, intervention, and impact.

The ASMP and UGO Mentoring Models

The ASMP mentoring model was based on the New Teacher Center (NTC) model (Goldrick, 2009), a well-recognized and comprehensive approach to new teacher support. Like NTC, ASMP uses a rigorous selection of mentors, who then participate in ongoing professional development, conduct weekly interactions with ECTs, collect and analyze classroom data using formative assessment tools, and collaborate with ECTs to develop plans for using reflective practices. However, ASMP adapted the NTC model to respond to the particular needs of teachers in Alaska, most of whom work with children from Alaska Native families that have unique needs. Many of these teachers also work and live in rural/bush communities in which they may be the only teacher in their school or one of very few.

The ASMP model was further adapted for the UGO program to accommodate implementation in an urban setting (e.g., less interaction with principals, more district coordination, and greater flexibility to meet with ECTs more often and for shorter periods of time). The key components of the UGO model are based on research on teacher mentoring, including the importance of high-quality, experienced mentors; professional development for mentors; mentor expectations for interactions with ECTs; and the use of formative feedback focused on educative mentoring.

Study Participants

Three cohorts of ECTs participated in the study—those hired in the five partner districts in summer 2012, summer 2013, and summer 2014. The validation study used random assignment of ECTs to a treatment group (UGO participants) or a control group (non-UGO participants) within blocks formed by district and cohort. Teachers in the treatment group received two years of mentoring through UAF. Teachers in the control group either received no mentoring or formal mentoring as normally provided through their district. Specifically, the control group in

two districts participated in formal district mentoring programs, which varied in the quality and intensity of support provided to teachers. In three districts no formal mentoring program was offered to control teachers. The treatment group in all five partner districts received UGO mentoring and did not participate in any other formal mentoring offered by their district. Key findings from the implementation, intervention, and impact studies follow.

Was the Project Implemented as Planned?

The implementation study focused on how well UAF and partner districts implemented the project as planned. Results of the implementation study indicate that UAF implemented UGO with acceptable fidelity across all three years in which implementation was measured.

The implementation study drew from an annual participant survey, which revealed several differences between the treatment group and control group. For example, the two groups had significantly different perceptions of the mentoring role. Treatment group ECTs were more likely than control group ECTs to think of their mentor as an expert guide, role model, advocate, and therapist/counselor. On the other hand, larger proportions of the control group considered their mentor to be a colleague, which is reasonable considering they also reported that their mentors were typically colleagues in their school. Treatment group ECTs met with their mentors less frequently but for longer periods than control group ECTs and had more frequent distance communication (e.g., telephone, email, text) with their mentors. Control group ECTs were more likely to be mentored informally and in person. As measured on the annual survey by a trust scale (Hoy & Tschannen-Moran, 1999), treatment group ECTs had higher levels of trust in their mentors than control group ECTs had in theirs.

The treatment group and control group ECTs also had substantially different mentoring experiences in their first two years of teaching. This included differences in the roles mentors played, types of interactions they had with their mentors, and the perceived impact the mentoring had on their teaching practices. Treatment group ECTs reported a greater impact on their teaching practices than did the control group ECTs.

What Was the Nature of the Intervention UGO Mentors and Mentees Engaged in?

Intervention is defined as the interactions, activities, and actions mentors actually engaged in with their ECTs. To measure intervention, we conducted a small exploratory study with a sample of treatment group ECTs. This study was based on mentors' instructional observations of ECTs using the Classroom Assessment Scoring System (CLASS®) collected through video recordings and on audio recordings of post-observation conversations between mentors and ECTs. Using approximately 10 percent of the 92 ECTs who had their instruction video recorded, we identified five ECTs who made the most gains in instructional practice (referred to as Gliders) and five who made the least gains (referred to as Sliders).

Gliders and Sliders had similar interactions with their mentors in terms of challenges, resistance to mentoring, and placement. However, analysis of the post-observation conversations between mentors and ECTs revealed intriguing differences between the two groups. For example, mentor-mentee pairs in the Glider group had longer conversations about instruction and student work, responded to each other more often, focused their conversations on how to build on positive practices, and engaged as peers more frequently.

What Impact Did Participation in UGO Have on Early Career Teachers and Their Students?

A major purpose of this study was to estimate the impact of ECT participation in UGO on three main outcomes: teacher retention in the teaching profession in Alaska, instructional practice, and the academic achievement of ECTs' students in reading, writing, and mathematics. While no statistically significant differences were found on the confirmatory outcomes, the following findings emerged, suggesting promising effects:

- Retention of treatment group ECTs in their third year of teaching was higher than that of control group ECTs (80.5% compared to 76.6%). While this is not a statistically significant difference, with an effect size of 0.16, it is a promising finding.
- Average gains on CLASS domains of emotional support, classroom organization, and instructional support were higher for control group ECTs compared to treatment group ECTs. This is the reverse of what we would hypothesize. Differences were not statistically significant (effect sizes ranged from -0.32 to -0.14).
- State assessment scores were higher for the primary students (grades 4–6) of first- and second-year treatment group ECTs in mathematics (effect sizes of 0.12 and 0.07, respectively). Assessment scores for primary students of first-year treatment group ECTs were higher in reading (0.07 effect size) compared to students of control group ECTs. In writing, the scores of primary students of second year treatment group ECTs were higher than the students of control group ECTs (effect size of 0.15). None of these differences were statistically significant. In the two subjects in which scores on state assessments were higher for students of control group ECTs (primary reading in Year 2 and primary writing in Year 1), effect sizes were both very small (0.04).
- State assessment scores were higher for the secondary students (grades 7–10) of first- and second-year treatment group ECTs in mathematics (effect size of 0.25 and 0.17, respectively). Differences were not statistically significant after ECTs' first year of teaching; however, the effect size of 0.25 in ECTs' first year of teaching suggests substantively important differences. The effect size of 0.17 after the second year of UGO-mentored teaching does not rise to the level of educational significance.

We found statistically significant differences on two exploratory analyses (at the level of $p < 0.05$) suggesting important effects on specific groups of students in critical subject areas (secondary mathematics and primary reading):

- State assessment scores were higher for a diverse group of secondary students (grades 7–10) of first-year treatment group ECTs in mathematics. We conducted separate analyses of assessment scores by all reported racial/ethnic groups. The secondary students (grades 7–10) of first year treatment group ECTs who were identified as white (Caucasian), Hispanic, and Alaska Native students or students of two or more races (not Hispanic) obtained higher scores on the state mathematics assessment than students of control group teachers. These differences were statistically significant, with p values ranging from 0.008 to 0.037. American Indian students also achieved higher scores on the state mathematics assessment than American Indian students with control group teachers ($p = 0.052$). Racial/ethnic groups showing no differences between students of treatment group ECTs and control group ECTs were African American, Asian, and Native Hawaiian/Pacific Islander.
- State reading assessment scores for students of first-year ECTs who had treatment mentors were higher than those of students with first-year ECTs in districts that had no formal mentoring programs (3 of the 5 districts). On average, the primary students (grades 4–6) of first-year treatment group ECTs obtained higher scores on the state reading assessment than students of control group teachers with no formal mentors. Differences were statistically significant ($p = 0.01$) with an effect size of 0.176.

Overall, UGO was implemented with fidelity, with room to strengthen the intervention by bolstering interactions between mentors and ECTs in terms of both time and activities and focusing on educative mentoring in which mentor-mentee partnerships consistently build on successes and collaboratively address instructional practice. Results of the impact study indicate positive effects on teacher retention and student achievement, with statistically significant impact on discrete groups of students. Other findings show educationally significant influence of the mentoring program on teachers and their students.

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Acknowledgments

We would like to thank our Education Northwest colleagues who contributed to this work, including several staff members who contributed to previous years of the study and are no longer with the organization. We would also like to acknowledge our colleagues who reviewed drafts of this report and provided valuable feedback. In addition, we appreciate the guidance and feedback from the Analysis and Reporting team for the National Evaluation of i3, at Abt and reviews from our ever-helpful technical assistance provider, Bruce Randel. The lead authors accept full responsibility for any remaining errors in the analyses and report.

We want to express our gratitude to our colleagues at the University of Alaska Fairbanks, district coordinators of the Urban Growth Opportunity program, and superintendents at the five study sites. Your collaboration and support was essential to conducting this work. We extend particular thanks to the more than 500 early career teachers who willingly participated in this study and provided valuable insight into the impact of mentoring on teachers and students.

Chapter 1. Introduction

Background

Programs for mentoring new teachers in Alaska respond to a critical need to increase teacher retention, particularly in the state's rural, remote village schools. In a 2003 speech to the Alaska State Legislature, Senator Lisa Murkowski pointed out that 20 percent of Alaska's 506 public schools have three or fewer teachers and that the teacher turnover rate in these schools can be as high as 100 percent every three years (Murkowski, 2003). These turnover rates have not changed significantly in the subsequent 14 years since Senator Murkowski made her speech: Teacher turnover remains a costly and ongoing challenge in Alaska. A recent study by the Center for Alaska Education Policy Research calculated the total average cost of teacher turnover at $20,431 per teacher. Scaling that figure up to the state level—and using Alaska's 2008-2012 turnover data—the cost to school districts is approximately $20 million per year (DeFeo, Hirshberg, Cope, & Cravez, 2017). Since 2004 the Alaska Department of Education and Early Development (AK DEED) has largely adopted the Alaska Statewide Mentor Project (ASMP) as a statewide professional development initiative, predominantly supporting rural early career teachers (ECTs), with a focus on prioritizing services for districts with the highest need. The project serves ECTs during their first two years in the profession by providing new teachers with fully released, highly trained mentors.

The ASMP Model

The ASMP model is based on the New Teacher Center (NTC) model, a well-recognized and comprehensive approach to new teacher support (Goldrick, 2009) However, ASMP targets the particular needs of Alaska teachers, most of whom work with children from Alaska Native families that have unique needs. Mentors participate in ongoing professional development, interact with ECTs weekly, collect and analyze classroom data, and collaborate with ECTs on reflective practice. AK DEED implemented ASMP in rural schools statewide; as a result, the program benefitted from state-level policy support, central organization, mentor training, logistical operation, and research.

The UGO Model

In 2011 the University of Alaska Fairbanks (UAF) received an Investing in Innovation (i3) grant from the U.S. Department of Education (DOE) to implement a validation study: the Alaska Statewide Mentor Project (ASMP) Urban Growth Opportunity (UGO), in five urban areas in Alaska. The UGO study aimed to validate the effectiveness of the ASMP in an urban setting. The rigorous study included implementation, intervention, and impact studies, which are summarized in this report. The implementation and intervention studies used mixed-methods designs; the impact study used a randomized controlled trial. In summer 2012, participating urban school districts hired the first of three cohorts of mentors who then received training to begin working with the first cohort of newly hired ECTs. Each summer for three years (2012, 2013, and 2014), we randomly assigned all of these ECTs to either treatment or control

conditions. ECTs assigned to the treatment (UGO) condition received a UGO mentor for two years and no other district- or school-level formal mentoring. Those assigned to the control condition received their district's regular program (business-as-usual or BAU) for ECTs. Two of these districts used formal mentoring programs. No formal mentor supports were available to ECTs in the three remaining UGO districts.

Each year researchers engaged in data collection activities to support the three studies. Education Northwest researchers participated in many of the UGO training events, and collected data from UAF and mentors regarding mentor participation in professional development activities and interactions with ECTs. We arranged for video recording of ECTs' instruction, administered surveys, and conducted interviews. We also collected teacher retention and student achievement data from AK DEED.

Literature Review

In the past 20 years there has been a dramatic increase in the number of teachers who are just entering the profession in the U.S. This is referred to as the "greening" of the teacher force by Ingersoll, Merrill, & Stuckey (2014), who report that in 1987-88 the typical teacher had 15 years of teaching experience. By 2011-12 the typical teacher was in their fifth year of teaching. A recent analysis of data from the U.S. Department of Education's Office for Civil Rights showed that nationally, 12 percent of all public school teachers are in their first or second year of teaching. In some states, the percentage is closer to 15 percent (Sawchuk & Rebora, 2016).

Recently, the National Commission on Teaching and America's Future (NCTAF, 2016) used "research-based evidence" to update its recommendations for improving the U.S. educational system. The commission recommended several strategies to improve teaching and learning. One of the six key strategies described is mandatory, state-supported, multiyear induction and mentoring for new teachers. This recommendation reflects the growing body of evidence on the effectiveness of mentoring. In a critical review of 15 empirical studies, Ingersoll and Strong found that induction for beginning teachers—and teacher-mentoring programs in particular—have a positive impact on teacher dispositions (Ingersoll & Strong, 2011). Nearly all the studies they reviewed "showed that beginning teachers who participated in some kind of induction had higher satisfaction, commitment, or retention" (Ingersoll & Strong, 2011, p. 38).

Key Components of Mentoring

Although mentoring programs are common in the United States (Strong, 2009), they can vary widely in quality, quantity, and the types of activities in which mentors and mentees engage. In their review of the literature Hobson, Ashby, Malderez, and Tomlinson (2008) reported a several findings directly related to the ASMP mentoring model, which are further described in the following sections.

Quality of mentors. Hobson and colleagues (2008) found that selecting mentors and matching them with ECTs is a critical feature of the mentoring relationship. The quality of the mentor's

teaching experience is important, as is their ability to impart knowledge, provide support, listen, and respond to needs. Likewise, the extent to which ECTs see and acknowledge that expertise via "professional respect" is crucial. Developing this professional respect is tied, in part, to the extent to which the ECT and mentor share common teaching assignments.

Mentor training/professional development. It is important for mentors to be trained appropriately for the role (Hobson et al., 2008). The most effective training includes seminars that involve groups of mentors and educators and opportunities for outside conversation to address isolation and engage in conversations that build skills (Hobson et al., 2008). Effective mentor training is research based and addresses how to interact personally with ECTs and how to conduct reflective practice (Hobson et al., 2008).

Expectations for mentor interactions with ECTs. In their review of the literature, Hobson and colleagues (2008) also found that trust is essential for a successful mentoring relationship because it encourages ECTs to share personal and professional challenges. Trust typically develops as ECTs see that their mentor listens and responds to their needs and as the mentor shows their commitment to the relationship by engaging regularly with the ECT in both formal and informal ways. In an extensive review of the literature, Hoy and Tschannen-Moran (1999) found that trust is a multidimensional construct and a critical element to learning. Through their analysis, Hoy and Tschannen-Moran concluded that trust relies on one party's willingness to be vulnerable to another. This willingness to be vulnerable is based on the confidence that the other is benevolent, reliable, competent, honest, and open (Hoy & Tschannen-Moran, 1999). Tschannen-Moran reports that "compelling evidence is accumulating on the importance of trust to high-performing schools" (Tschannen-Moran, 2017).

Another critical component of successful mentoring relationships is dyad dynamics. In a study of successful and failed mentoring relationships in academic health centers, Strauss and collaborators (Strauss et al., 2013) identified five essential features of successful mentoring relationships: reciprocity, mutual respect, clear expectations, personal connections, and shared values. Adult learning theory is central to this idea, and we know from a large body of literature that adult learners need to be involved in the planning and evaluation of their instruction, that experience—including mistakes—should be the basis for learning activities, that adults are most interested in learning about subjects that have immediate relevance to their job or personal life, and that adult learning should be problem-centered rather than content-oriented (Knowles, 1984; Smith, 2002; Merriam, 2001). Even though ECTs are not entrenched in their teaching practices, effective educative mentoring often relies on changing their behavior. The literature on changing adult behaviors suggests that adult learners have preferences for active learning strategies that support cognitive growth, transformational learning, immediate application of knowledge, and opportunities for self-direction (Ross-Gordon, 2011).

Use of formative feedback for educative mentoring. Relationship-building is another cornerstone of effective mentoring. Mentors and ECTs benefit from taking time at the beginning of the relationship to get to know each other personally and professionally (Hobson et al., 2009).

This includes assessing strengths and areas of growth and setting goals. An important feature of goal setting is to ensure that the ECT has influence and autonomy over the direction of mentoring and the development of their "teaching style." The ability for a mentor to provide feedback that allows the ECT to grow hinges on their ability to observe ECTs' practice. An observation cycle that includes a pre-observation conference, observation, and a post observation conference that is "(i) conducted in a sensitive, nonthreatening way; (ii) focuses on specific aspects of mentees' teaching; and (iii) provides an opportunity for genuine and constructive dialogue between mentor and mentee which includes joint exploration of the perceived strengths and weaknesses of the mentee's teaching, discussion of the likely impacts of observed teaching actions, and the development of ideas which might help the mentee overcome any problems or weaknesses" (Hobson et al., 2009, p. 212). Educative mentoring is a specific type of mentoring that focuses on improving mentees' practice (Achinstein, & Athanases, 2005; Feiman-Nemser, 2001). Educative mentors find openings, pinpoint problems, probe new teachers' thinking, notice signs of growth, and focus on students. These characteristics are reinforced by the literature on the need to engage mentees in activities that will actively engage their learning. A critical piece of observation cycles is engaging mentors and ECTs in sustained "professional dialogue" focused on developing ECTs' instructional skills (Lofthouse, Leat, Towler, Hall, & Cummings, 2010).

Organizational support. Evidence is growing that teacher mentoring has greater benefits when it is part of a schoolwide support system for the induction of new teachers. Ingersoll (2001) noted that organizational factors within a school, such as lack of support from principals, student discipline issues, and lack of input and decision-making power, cause teachers to leave the profession. In their 2006 review of empirical literature on recruitment and retention, Guarino, Santibáñez, and Daley reported that inservice school policies "that provided mentoring and induction programs, particularly those related to collegial support, had lower rates of turnover among beginning teachers." Their synthesis of the research also revealed that "[s]chools that provided teachers with more autonomy and administrative support had lower levels of teacher attrition and migration" (Guarino et al., 2006, p. 201). In their meta-analysis of teacher career trajectories, based on findings from 34 studies of 63 attrition moderators, Borman and Dowling (2008) examined attrition and factors that moderate attrition. Their analysis found "that initiatives that lessen the bureaucratic organization of schools and school systems and strategies that promote more genuine administrative support from school leaders and collegiality among teachers are strategies that may improve retention" (Borman & Dowling, 2008, p. 399).

Implementation/intervention science. Implementation science seeks to investigate "*what* is actually enacted, *how* an innovation is enacted, and *why* the contexts, conditions, characteristics, and other influences shape innovation enactment as they do" (Century & Cassata, 2016, p. 172). Implementation and intervention are sometimes referred to as part of a "black box" that evaluation research has historically struggled to open. Adding to the confusion is that different researchers use different labels to describe the implementation/intervention distinction. Some researchers use the terms implementation and intervention interchangeably (e.g., Greene, 2015),

while others contrast "structural dimensions of fidelity" to "process dimensions of fidelity" (Harn, Damico, & Stoolmiller, 2017) or simply compare implementation to "innovation" (Century & Cassata, 2016). In our approach, "implementation" is the processes or methods by which the intervention is adopted and put into use, while "intervention" is the process or methods used to actually promote improvements or changes in outcomes (Dunst, Trivette, & Raab, 2013). Implementation, then, is the training, resources, and requirements for mentors, all of which are intended to promote the delivery of high-quality mentoring to novice teachers (the intervention). Researchers in implementation science contend that implementation and intervention should be considered as distinct yet overlapping aspects of a program because effective implementation (e.g., training to use an intervention such as mentoring) does not guarantee an effective intervention (e.g., high-quality mentoring in practice) (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Dunst et al., 2013).

Key Impacts of Mentoring

The impact of mentoring on supporting and retaining excellent teachers has important implications for teacher preparation programs, state departments of education, and school districts. Several impacts are associated with ECTs who work with a mentor teacher. These include increased retention in the teaching field and, to a less-documented extent, improved instructional practice and increased student achievement.

Retention. The largest body of research on teacher mentoring and collegial support is associated with teacher retention. In an analysis of national survey data, Smith and Ingersoll (2004) used data from the 1990–2000 Schools and Staffing Survey and its Teacher Follow-up Survey. They found that, among the 3,000 beginning teachers in the survey sample, those who participated in induction and mentoring programs in their first year of teaching were less likely to leave teaching or change schools. In addition, Smith and Ingersoll found that the more types of support teachers experienced, the lower the probability that they would change schools or leave the teaching profession. In their study, on average, 29 percent of beginning teachers either changed schools (15%) or left teaching (14%). The types of induction support that had the strongest positive association with retention were having a mentor in the same field, having common planning time with other teachers in the same subject, having regularly scheduled collaboration with other teachers, and being part of an external network of teachers. In another study, Ingersoll and Kralik (2004) reviewed 150 empirical studies on induction and mentoring programs. The researchers found 10 studies that could be included in their analysis because they met their criteria (used quantitative data; well-defined, verifiable outcomes; and a comparison group). The review did not provide definitive evidence of the value of mentoring programs in keeping new teachers in the profession; however, the authors reported that "collectively the studies do provide empirical support for the claim that assistance for new teachers and, in particular, mentoring programs have a positive impact on teachers and their retention" (Ingersoll & Kralik, 2004, p. 14). Ingersoll and Kralik also concluded that "conspicuous by their absence in this field are careful, randomized or quasi-randomized experimental studies involving random-assignment procedures and controlled trials with a no-treatment control group. This kind of approach is perhaps the most expensive, but also is

potentially the most fruitful" (Ingersoll & Kralik, 2004, p. 15). In a separate research review conducted for the Education Commission of the States, researchers agreed that the empirical evidence linking mentoring to teacher retention was significant but limited (Allen, 2005).

A 2006 review of empirical literature on teacher recruitment and retention examined the characteristics and policies of schools that show evidence of successfully recruiting and retaining teachers (Guarino et al., 2006). The review concluded that "[s]chools that provided mentoring and induction programs, particularly those related to collegial support, had lower rates of turnover among beginning teachers" (p. 201). In a recent study, the Regional Educational Laboratory (REL) Central, in collaboration with Aurora Public Schools (CO),used a randomized controlled trial to examine the impacts of a mentoring program on student achievement, teacher retention, and teacher evaluation ratings (DeCesare, McClelland, & Randel, 2017). In the study, the district's elementary school teachers were randomly assigned to receive either the district's typical mentoring support only (the business-as-usual/BAU group) or to receive both BAU mentoring support and added support from a retired mentor. Researchers found that "although more teachers in the program group than teachers in the business-as-usual group left the district after two years, the effect of the program on teacher retention was not significant" (p. i). The study also found that the amount of time ECTs were mentored was associated with higher retention rates during their second year of participation. "Mentees who received more hours of mentoring were more likely to stay in the district. The odds of a mentee staying in the district doubled with each additional 10 hours of mentoring. The sharpest increase in retention occurred with each additional hour received after 25 hours" (p.i).

Instructional practice. A review of the benefits of ECT participation in mentoring found limited evidence of impact on teaching practice, but did find some evidence that ECTs had experienced impact on their "behavior and classroom management skills and ability to manage their time and workloads" (Hobson et al., 2008). In a recent review of 32 empirical studies with teacher coaching (comparable in definition to ASMP mentoring) as an outcome, Kraft, Blazar, and Hogan (2017) found large positive effects on instructional practice.

Student achievement. There is very little empirical research that connects improved student achievement to mentoring. In their recent study of a mentoring program using retired teachers to mentor elementary ECTs, DeCesare, McClelland, and Randel found somewhat mixed results (DeCesare et al., 2017). Student gains in mathematics achievement were statistically significantly higher in the students of teachers in the program group after the first year of mentoring. At the end of the second year, scores of students of teachers in the program were higher (effect size of 0.06) but not at a statistically significant level. Reading achievement was higher among students taught by formally mentored teachers in the program group than students of teachers in the control group (effect size of 0.07), but the differences were not statistically significant (DeCesare et al., 2017). In their meta-analysis of empirical studies on the impact of mentoring (referred to as "coaching" by these researchers) Kraft, Blazar, and Hogan (2017) found positive effects on student achievement. The largest effects were in programs that

focused on teachers' instructional practice in reading. The pooled effect from these studies was .18 standard deviations on students' reading achievement (Kraft et al., 2017).

UGO Logic Model

Evidence from the mentoring literature on quality mentors, professional development, interactions with ECTs, and using formative feedback is reflected in key components of UGO, including the importance of high-quality, experienced mentors; professional development for mentors; mentor expectations for interactions with ECTs; and the use of formative feedback focused on educative mentoring. To map out a clear picture of UGO, we created a logic model of the program (figure 1). Logic models provide a simplified picture of programs, including goals, plans for meeting those goals, and a description of what program success would look like (Kekahio, Cicchinelli, Lawton, & Brandon, 2014; W. K. Kellogg Foundation, 2004). Together, Education Northwest and UAF identified four key components of the program: selection and assignment of highly qualified mentors; in-depth professional development for mentors; structured interactions between mentors and ECTs; and use of formative assessment tools.

Selection and Assignment of Highly Qualified Mentors

Each participating UGO district hired a district coordinator to act as a liaison between the district, mentors, UAF, and the external research team. To ensure that districts identified and hired highly qualified mentors to work with ECTs, UAF staff members collaborated with districts, using a structured set of application questions and interview rubrics to identify potential mentors. The ASMP model includes a minimum qualification for becoming a mentor of at least eight years of teaching experience in Alaska. In assessing the quality of potential mentors, the ASMP model also stipulates that candidates have recent classroom experience or other relevant work in the education field (within two years), have strong content knowledge in core subjects, be recognized as an excellent classroom practitioner, and demonstrate commitment to improving academic achievement for all students.

Once hired, mentors are fully released from classroom responsibilities and dedicate their full-time equivalent (FTE) to mentoring. To provide sufficient time for each mentor to spend with assigned ECTs, a full-time mentor has a caseload of no more than 15 ECTs.

Figure 1. UGO logic model

Goal: To increase the retention of Early Career Teachers (ECTs) in Alaska and to improve the achievement of their students.

Research inputs

- Eligible participants who are first-year teachers
- Urban classroom teachers in Anchorage, Fairbanks, Kenai, Mat-Su, and Sitka school districts
- Random assignment of ECTs to control and treatment groups within urban districts
- Three cohorts over five years of the study, each participating for two years
- Cross–section of students, such as special needs, limited English proficient (LEP), and Alaska Native
- Concurrent implementation, without cross–contamination, of other mentor models or no mentoring, for comparison purposes

Actions over two years (implementation)

ASMP UGO guides district in the recruitment and assignment of highly qualified mentors
- Experienced teachers (at least 8 years in Alaska)
- Full-release mentoring: dedicated time for mentoring
- Caseload of no more than 15 ECTs per mentor

Mentors participate in in-depth professional development
- Fully attend Orientation (~2 days/year)
- Fully attend Wrap Up (~3 days/year)
- Fully attend mentor training, using the ASMP approach/materials based on the New Teacher Center (NTC) model (4 academies/year for 2 years)
- Fully attend ASMP training (3–4 sessions/year)
- Participate in Friday Forums (at least 10/year)
- Communicate monthly with coach
- Fully participate in shadowing sessions with coach (2 sessions as first-year mentor and at least 1 in subsequent years as a mentor)
- Participate in coaching, using mentor formative assessment tools

Mentors interact with ECTs
- Communicate at least weekly with ECTs
- Provide face-to-face interaction (at least 3.5 hours/month)

Mentors use Formative Assessment Tools with ECTs*
- Document conversations through Collaborative Assessment Log
- Use *formative assessment tools* to support ECTs and gather classroom data
- Support reflective practice through *Individual Learning Plan*, *Mid-Year Review*, and *Professional Growth Reflection*

* *Note:* Connect all work to Standards for AK Teachers, AK Cultural Standards, and/or Continuum of Teacher Development

Mediators (intervention)

Mentors respond to ECTs' needs
- Mentors respond to needs through written communications
- Mentors' respond to needs during face-to-face interactions

Mentors build trusting relationships with ECTs
- ECTs report trust in their mentors
- Face-to-face conversations indicate ECTs trust their mentors

ECTs actively participate in mentoring
- ECTs respond to communications from mentor
- ECTs are willing to meet with mentor
- ECTs engage in mentoring conversations

ECTs' teaching practice is influenced by mentor
- ECTs report that contact with mentors influences their practice
- ECTs are receptive to changing practice during face-to-face interactions

Outcomes

UGO-mentored ECTs have retention ates equal to, or higher ıan, non-UGO-mentored ECTs

UGO-mentored ECTs' instructional practices improve more than non-UGO-mentored ECTs

Students of UGO-mentored ECTs score higher in reading, writing and math than students of non-UGO-mentored ECTs

In-Depth Professional Development for Mentors

Mentors receive ongoing and in-depth professional development. Beginning in the summer prior to mentoring, all mentors attend orientation that introduces new mentors to the project and reviews program changes for continuing mentors. Following orientation, mentors participate in four trainings (approximately one-weeklong) per year. UAF gears some of this training content to new mentors and other content to all mentors. Typically, the first three days of training cover the New Teacher Center (NTC) curriculum. Certified NTC trainers in Alaska provide this required training to first- and second-year mentors. The specific focus is on the ASMP model of mentoring, which is an adaptation of the NTC model (referred to as Academy). The remaining training involves all mentors and includes ASMP-specific training and the Friday Forum. ASMP training is devoted to topics specifically related to implementing the ASMP model, and Friday Forum provides an opportunity for mentors to address relevant issues and spend time preparing materials and networking. Sometime during the week, the ASMP also provides a Cultural Connections training.

Between these intensive, weeklong trainings, mentors participate every other Friday in a virtual Friday Forum. These three-hour meetings address successes, challenges, and other pertinent issues that arise through mentors' work. Friday Forum is ongoing mentor professional development and networking time used to keep the mentors connected to each other and the program and to support them in the field. They also receive ongoing support from a coach who communicates with them twice monthly and shadows them during their face-to-face visits with ECTs. "Shadowing" involves coaches joining mentors for a site visit, participating in classroom observations and debriefs alongside mentors, and offering feedback to mentors post-ECT interaction. Coaches shadow first-year mentors twice, and once per year thereafter. During communications and shadowing, coaches provide feedback on mentors' use of ASMP materials and strategies using the Mentor Accountability and Growth Assessment System (MAGA). Coaches are all highly experienced mentors who have completed the NTC and ASMP training multiple times.

A year-end Wrap Up session takes place each May. During this time, mentors review all the documentation completed during the year for each ECT and submit it to the ASMP research team.

The ASMP model, while derived from the NTC model (both Academy trainings and Friday Forums), includes modifications to fit the needs of Alaska, such as restructured time with ECTs (while maintaining minimum criteria); restructured timing of NTC's formative assessment system to fit the Alaska calendar year; and a focus on working with students of diverse cultural backgrounds, especially Alaska Native students.

During the four years in which UAF implemented UGO, the state experienced reduced revenues caused by changes in international oil prices. (The oil industry has long been a primary employer and revenue source for the state.) State agencies across the board accepted budget cuts, including UAF and its Office of Academic Affairs & Research, K–12 Outreach,

which houses the ASMP. In response, UAF altered some of the training by reducing the number of days mentors participated, moving the in-person meetings from Fairbanks to the more centrally located Anchorage and requiring mentors who lived within driving distance of the city to commute daily. While these changes condensed meeting time, they did not change the content of the professional development.

Structured Interactions between Mentors and ECTs

The training ultimately prepares mentors to interact with their ECTs in a way that involves both trust and reflection. ASMP expects mentors to maintain weekly contact with each ECT, usually through phone, email, or Skype. In addition, ASMP expects at least monthly in-person contact between mentors and each ECT, totaling at least three and a half hours per month. All conversations should focus on instructional practices (educative mentoring). On-site visits provide an opportunity for mentors to collect data in an area of the ECT's interest, review and analyze the data, and suggest instructional strategies or develop a plan to move ECT practice forward. Mentors base their work on responsiveness to ECT needs, which includes district-specific needs, school-specific needs, Alaska-specific needs, and culturally responsive needs for the region. Mentors document all of their contacts using a variety of ASMP tools.

Mentor Use of the Formative Assessment Tools

During training, mentors learn about, and gain experience using, the project's formative assessment tools. The tools provide a structured means for documenting work with each ECT. For example, mentors use a Collaborative Assessment Logs (CALs) to capture ongoing communications between them and their ECTs. Other tools mentors use on site with their ECTs include classroom observation and other instructional data collection (e.g., seating charts, I Notice I Wonder, or Selective Scripting tools). Mentors use some tools to promote reflective practice—the Individual Learning Plan (ILP), Mid-Year Gauge (MYG), and Professional Growth Reflection (PGR). Mentors and ECTs review a self-assessment and complete an ILP in fall/early winter. Together they establish areas of growth for the ECT, and they revisit these through the MYG. They complete a PGR in the spring to allow ECTs to reflect on their progress and growth during the year. All documentation includes areas for mentors and ECTs to identify relevant Alaska Teaching Standards, including Alaska Standards for Culturally Responsive Schools.

Overview of the Study

The study used random assignment of ECTs to treatment (UGO) or control (business as usual, or BAU) groups at the teacher level, within blocks formed by district and cohort. Teachers in the UGO group received two years of mentoring through UAF. BAU teachers were eligible to receive any formal district mentoring, or no mentoring, as normally provided through the district's BAU. The BAU condition was district-specific, varied in quality and intensity, and included the absence of mentoring. UGO-mentored ECTs received UGO mentoring and did not receive any other formal mentoring offered in their district. Three cohorts of ECTs participated—those hired in partner districts in summer 2012, summer 2013, and summer 2014.

RCT Design

Within each of the three cohorts, teachers in each district were randomly assigned to UGO or BAU conditions from the beginning of each academic year through October 1 of that year, based on time of hire. The probability of assignment to UGO and comparison groups was equivalent across districts and batches. Teachers were identified for randomization if they met the eligibility criteria for ECTs hired within the specified time windows.

Education Northwest received lists of ECTs hired across districts from either UAF or each district coordinator; lists were received in batches to accommodate hires made after the first day of school. We combined district lists and sorted the list in alphabetical order by the ECT's first and last name. ECTs were assigned a random number via a random-number generator. We then re-sorted the list by district and ascending random number. Within each district, teachers on the first half of the list were assigned to the treatment group (UGO) and the second half were assigned to the control group (BAU). In the case of an odd number of ECTs, for the first batch of randomization we assigned the middle ECT to the treatment group, the second batch the middle ECT was assigned to the control group, and so on. In the case of only one ECT being hired in a district, we used a coin toss, with heads indicating assignment to the control condition and tails indicating assignment to the treatment condition. In each ECT's first year of teaching, for purposes of analysis, students were randomly assigned to experimental conditions because they were attached to ECTs at the time ECTs were randomly assigned.

Research Questions

Under the broader aim of validating the ASMP model in an urban environment, we conducted three studies: implementation, intervention, and impact.

The purpose of the implementation study was to examine UGO as it was put in place by UAF. The research questions for the UGO implementation study were:

1. What was the overall level of fidelity of implementation?
2. To what extent were the UGO key components implemented as planned—mentor recruitment/assignment, training, contact, and use of formative assessment tools?
3. How much variation in implementation was there across mentors?
4. In what ways were key components implemented differently from the model as planned?
5. What were the facilitating conditions and challenges to implementation?

The purpose of the intervention study was to examine what UGO mentors actually did as they interacted with their ECTs. We framed the intervention study with this research question: What patterns in UGO mentor-ECT conversations are associated with improved ECTs' instructional practice?

The purpose of the impact study was to estimate the effect of ECT participation in UGO on key outcomes. Research questions for the impact study were:

1. What is the impact of ECTs' participation in UGO on remaining in the teaching profession in Alaska?
2. What is the impact of ECTs' participation in UGO on their instructional practices?
3. What is the impact of ECTs' participation in UGO on the reading, writing, and mathematics achievement of their students?

Samples

Implementation study. We included all mentors and their ECTs in all five districts. Some indicators included in the UGO key components involved fewer mentors, as appropriate.

Intervention study. We included UGO ECTs with scores on the CLASS, drawing a subsample of ECTs with the greatest and least gains. This subsample included approximately 10 percent of ECTs with instructional practice outcome data.

Impact study. We included all ECTs randomly assigned to UGO and BAU conditions in the retention analyses.

The instructional practice analysis included a randomly selected subsample of ECTs from the full sample of Cohort 2 and Cohort 3 ECTs randomly assigned to the UGO and BAU conditions. We used a replacement process due to varying district requirements as to which teachers could be video recorded. A priori, across all districts, we excluded preschool teachers and teachers providing instruction in languages other than English and Spanish. At Anchorage, we excluded special education teachers and teachers assigned to schools on military bases, per district requirements. We excluded Cohort 1 ECTs from the study because in the first year we were still negotiating video recording logistics with districts.

The student achievement analysis included, from the original full sample of randomly assigned ECTs, those who taught reading, writing, and mathematics to students in grades 4–6 and ECTs who taught mathematics to students grades 7–10. As Alaska administers the state assessment to students in grades 3–10, we excluded ECTs who taught in grade 3 because their students would not have baseline scores and those who taught grades higher than grade 10 because their students would not have outcome scores. Since most primary classrooms are self-contained and/or students receive the bulk of their instruction from their homeroom teacher, we included all eligible ECTs teaching grades 4–6. In the secondary grades, teachers vary, and language arts is often integrated into instructional practice across the curriculum, making it difficult to attribute reading and writing assessment scores to a single ECT. Therefore, we only included secondary ECTs who provided mathematics instruction.

Data Sources and Outcome Measures

We used data from multiple participants, collected by multiple instruments, and administered by different entities for the various studies. Participants included administrators, trainers, coaches, district coordinators, mentors, ECTs, and students. Instruments included interview protocols, applications, rosters, records, audio and video recordings, surveys, and assessments.

Data were collected by Education Northwest researchers and contractors, UAF administrators, mentors, coaches, and AK DEED. Each of these is displayed below (Table 1) and further described in the text that follows.

Table 1. Data sources

Data source	Differences between conditions	Implementation	Intervention	Impact
Administrator-level data				
Annual UAF staff member interviews (administrators, trainers and coaches)		X		
Annual district coordinator interviews	X	X		
Annual district mentoring program administrator interview	X			
Mentor-level data				
UAF mentor application		X		
Professional development attendance rosters		X		
Mentor profile form (administered by Education Northwest)		X		
Contact log by Calendar Week (collected by mentors)		X		
Mentor folders on each ECT (Collaborative Assessments Logs and formative assessment and reflective practice tools)		X		
Coaches' folders on each mentor		X		
Annual interview		X		
Dyad-level data				
Mentoring audios			X	
ECT-level data				
Annual survey	X		X	X
CLASS®			X	X
AK DEED retention data				X
Student-level data				
Alaska state student assessment data				X

Interviews. We used interview data in the implementation study and to describe differences between the BAU and UGO conditions. Each spring we conducted interviews with protocols aligned to the four key components of the intervention to ascertain how different stakeholders experienced the intervention and encountered successes and challenges. We interviewed UAF staff members (including administrators, professional development providers, and coaches); district coordinators; district mentoring program administrators; and mentors. In most cases, we conducted these interviews in person; otherwise, we conducted them via telephone.

Forms, surveys, and other documentation. Data collected on forms, surveys, and other extant documents were used for the implementation study. Both Education Northwest and UAF collected these data. UAF shared their data with Education Northwest. To document mentor full-time equivalence (FTE) and the extent to which mentors were fully released to serve as mentors, UAF shared their annual mentor application with us. We augmented these data with a brief annual mentor profile form we collected each fall.

Professional development participation data were documented and collected in a variety of ways. In all years, we collected our own mentor attendance data while observing many of these events. For any in-person training event we did not attend, we either collected attendance data from UAF and/or the district coordinators. For Friday Forum, we received a participation roster from a Friday Forum co-facilitator who tracked this.

We used multiple data sources to document mentor interactions with ECTs. These included mentor's weekly contact with ECTs documented in the Contact Log by Calendar Week form. This documents the means by which mentors contacted ECTs (phone, email, face-to-face visits) and total minutes spent in face-to-face activities. Another source of mentor level data is the folder mentors maintain for each ECT. These folders hold CALs that mentors complete weekly, summarizing successes, challenges, next steps for both the mentor and ECTs, and standards addressed during conversations. They also contain the various formative assessment tools mentors used with ECTs, including classroom observation tools and reflective practice tools.

Coaches also collected data from their interactions with mentors in a folder. These documents included their bimonthly communication with mentors and associated CALs, coaching activities, and reflective practice tools.

We administered an annual ECT survey to both BAU and UGO ECTs. In survey analyses, we combined all UGO ECT surveys across all cohorts and years and compared results to all BAU ECT surveys combined across all cohorts and years. In total, we analyzed 1,049 surveys, 512 from BAU ECTs and 537 from UGO ECTs. A large section of the survey included items applicable only to ECTs who had mentors. In these analyses, we considered an ECT as having a mentor if they had a UGO mentor, a formal mentor (a district-assigned mentor in Anchorage and Kenai or a school-assigned mentor), or an informal mentor (either in their school or outside their school).

Audio recordings. Mentors audio recorded selected post-observation conversations between themselves and ECTs as part of the intervention study. During their second year of mentoring, we asked mentors to record four conversations with each of their second-year ECTs—two recordings each semester. These were to be post-observation debrief conversations. To ensure the recordings reflected the diversity and breadth of the work mentors did, we requested that mentors space recordings for a given ECT at least one month apart and that mentors capture a variety of different types of conversations. Mentors could choose when to record these conversations and ECTs could choose not to have certain conversations (or portions of conversations) recorded. Mentors used audio recorders and uploaded the audio files to a secure upload site.

Instructional practice data. We used observations of instructional practice for the intervention and impact studies. We obtained data on instructional practice through video recordings of ECTs conducted by video technicians hired by Education Northwest. Cohort 2 and Cohort 3 ECTs randomly assigned to the instructional practice study were video recorded three times in the fall of their first year of teaching, three times in the spring of their first year of teaching, and three times in the spring of their second year of teaching. The three recordings at each time period were made within a given recording window of about one month.

Instructional observation recordings were scored by independent raters trained in using the Classroom Assessment Scoring System (CLASS®) (Pianta & Hamre, 2008). We selected this instrument for several reasons: (1) psychometric properties have been calculated and described in the literature, (2) the scales were found to be reliable and predictive of student gains in another recent professional development study (Allen, Pianta, Gregory, Mikami, & Lun, 2011), (3) all the domains are observable through a recorded classroom observation, and (4) a preliminary alignment study showed that CLASS was aligned with the ASMP Professional Teaching Standards and the Standards for Alaska's Teachers.

We provided video recordings to certified CLASS raters who scored the ECTs' instruction, blind to ECTs' UGO or BAU condition and the time period in which the recordings were made. Raters employed the CLASS elementary, upper elementary, and secondary protocols. Depending on the length of each recorded instructional period, raters scored "cycles" of about 15 minutes of instruction in each of 10 dimensions across three domains—emotional support, classroom organization, and instructional support. Raters double-coded 3 percent of the video recordings. We calculated interrater reliability to ensure consistent scoring of the observations across raters. Across the three protocols we obtained interrater reliability of 89 percent. We obtained interrater reliability of 84 percent for the elementary recordings, 92 percent for the upper elementary recordings, and 91 percent for the secondary recordings.

CLASS uses a 7-point scale, with scores of 1 and 2 in the low range; 3, 4, and 5 in the midrange; and 6 and 7 in the high range. For each observation, we averaged up to three cycle scores for each dimension and then averaged the dimension scores to calculate domain-level scores. We then averaged the domain-level scores across up to three observations from each time period.

Most ECTs had scores from the same observation protocol in both Years 1 and 2, but some ECTs who changed positions between their first and second years of teaching had scores from different protocols. We analyzed the domain scores for emotional support, classroom organization, and instructional support from all ECTs pooled across the three protocols. In addition, as analyses indicated differences in results across the elementary and secondary protocols, we conducted analyses of these scores for the elementary scores only and for the upper elementary and secondary scores combined.

Teacher retention data. We used state-level teacher employment records for the analysis of impact on teacher retention. We received these data directly from AK DEED under a data-sharing agreement. AK DEED maintains a database of teachers currently teaching in the state and provided files that documented the Alaska public schools each ECT taught in from 2012-13 through 2016-17. If a teacher is included in the file for a given year it indicates that they are teaching in the state; their absence from the records indicates they are not teaching in the state. This enabled us to calculate retention for Cohort 1 ECTs in their third, fourth, and fifth years of teaching and for Cohorts 2 and 3 ECTs into their third year of teaching.

Student achievement data. We used student achievement data from state-administered assessments for the analysis of impact on student achievement. We collected information from district coordinators regarding the classroom rosters of ECTs teaching reading, writing, or mathematics to grades 4–6 students and ECTs teaching mathematics to grades 7–10 students. For these students we received state assessment data from AK DEED. Data from 2011-12 were baseline data for students from the spring administration of the reading, writing, and mathematics Standards Based Assessment (SBA). We also received reading, writing, and mathematics SBA data from students assessed in spring 2013 and spring 2014. The spring 2015 data we received in reading, writing, and mathematics were from the pilot administration of the Alaska Measures of Progress (AMP). We received "claim-level "data from the English language arts assessment to calculate separate reading and writing scores. Alaska cancelled the spring 2016 administration of the AMP due to technical difficulties. We calculated z-scores for each student on each assessment using statewide assessment means and standard deviations for each subject, grade, and year, and we used these z-scores in our analyses. Additional details concerning the standardization are given in the discussion of analytic methods.

Setting and participants. UGO was implemented in five urban districts across Alaska. The number of coaches, mentors, ECTs, and students was driven by the number of newly hired teachers within each district. The following sections describe the districts and participants.

Urban Districts

In 2011, UAF collected data on Alaska school districts and spoke with district administrators to recruit districts to participate in the UGO study. Ultimately, they selected districts to participate if they were in an urbanized area of Alaska, agreed to participate in the study, and anticipated new teacher hires. Five of Alaska's largest urban districts participated—Anchorage, Fairbanks North Star Borough (Fairbanks), Kenai Peninsula Borough (Kenai), Matanuska-Susitna Borough

(Mat-Su), and Sitka. No new districts were added after 2011. Table 2 displays select demographics for the five districts during the 2010-11 school year.

Table 2. UGO district demographics

	Anchorage	Fairbanks	Kenai	Mat-Su	Sitka	Total
Total preK–12 enrollment	49,206	14,285	9,327	17,079	1,388	91,285
Total schools	98	35	44	44	6	227
Total teachers (in FTE)	2,973	844	594	993	99	5,503
Enrollment by race/ethnicity						
American Indian/Alaska Native	4,332	1,569	1,131	1,971	413	9,416
Asian	5,128	335	126	300	116	6,005
Hispanic	5,030	1,018	283	389	43	6,763
Black	3,183	877	60	264	10	4,394
White	23,250	9,071	7,308	13,664	732	54,025
Hawaiian/Pacific Islander	2,052	121	48	118	8	2,347
Two or more Races	6,231	1,294	371	373	66	8,335
Enrollment of other student groups						
ELL/LEP	5,351	384	201	419	46	6,401
SPED	6,964	2,235	1,329	2,569	179	13,276

Source: CCD 2010-11 Version 2a. (U.S. Department of Education, National Center for Education Statistics, 2012)

Mentors

Beginning in summer 2012, districts hired the first cohort of UGO mentors. Over the next two years, districts hired new mentors to replace those who did not return and to ensure ideal caseloads as additional ECTs were hired. In the last year of the study, districts did not hire any new mentors. Table 3 displays mentor participation by district and year.

Table 3. UGO mentors

Year	Mentors	Anchorage	Fairbanks	Kenai	Mat-Su	Sitka	Total
2012	New	4	2	1	2	1	10
	Total	4	2	1	2	1	10
2013	New	4	3	1	1	0	9
	Returning	3	2	1	2	1	10
	Total	7	5	2	3	1	18
2014	New	1	0	1	0	0	2
	Returning	6	4	1	3	1	15
	Total	7	4	2	3	1	17
2015	Returning	4	3	1	2	1	11
	Total	4	3	1	2	1	11

Of the 21 mentors who served in the study, the majority were female (85.7%). Their average age was 50.5 years. They spent 29.6 of these in Alaska and taught for 21.7 of them.

Early Career Teachers

The overall study sample came from the population of newly hired ECTs in the five participating districts. We defined ECTs as district-contracted teachers in their first year in the teaching profession, hired after October 1 of the previous school year and before September 30 of the current school year, and assigned to a position that included the development of lesson plans and a student list/roster. We randomly assigned new hires to UGO and BAU conditions in 2012-13 (Cohort 1), 2013-14 (Cohort 2), and 2014-15 (Cohort 3). Once hired, ECTs participated in the study for two years (Cohort 1 through 2013-14, Cohort 2 through 2014-15, and Cohort 3 through 2015-16). Each year at least one UGO ECT stopped working with their mentor (n = 13). This was typically because the ECT was put on a plan of improvement (54%); otherwise ECTs dropped their mentor because they felt they were ready to "be on their own" or "had enough support in their building." One UGO ECT declined to work with their UGO mentor in order to work with a district mentor more aligned with his/her subject area assignment. Table 4 shows the number of ECTs included in each study by cohort and year.

Table 4. ECTs included in studies, by cohort and group

	Retention and implementation		Instructional practice		Student achievement		Intervention[1, 2]
Cohort	UGO	BAU	UGO	BAU	UGO	BAU	UGO
1	83	73	NA	NA	25	15	NA
2	105	102	31	30	32	25	—
3	98	95	39	34	22	25	—
Total	286	270	70	64	79	65	10

[1] No BAU teachers were included in the intervention study.
[2] Data are not reported to protect this group with 10 or fewer teachers.

Table 5 provides additional detail regarding ECTs in their first year of teaching.

Table 5. Select characteristics of ECTs at baseline

	Anchorage		Fairbanks		Kenai		Mat-Su		Sitka		All		
Characteristics	**UGO**	**BAU**	**UGO**	**BAU**	**UGO**	**BAU**	**UGO**	**BAU**	**UGO**	**BAU**	**UGO**	**BAU**	**Effect size[1]**
No mentor	7% (1)	3.7% (5)	0.0% (0)	61.1% (22)	0.0% (0)	24.1% (7)	0.0% (0)	44.6% (25)	0.0% (0)	11.1% (1)	0.4% (1)	22.6% (60)	-2.664
Formal mentor	98.6% (144)	94.9% (129)	100.0% (32)	2.8% (1)	100.0% (37)	62.1% (18)	100.0% (58)	12.5% (7)	100% (8)	22.2% (2)	99.3% (279)	59.0% (157)	2.768
Informal mentor	0.7% (1)	1.5% (2)	0.0% (0)	36.1% (13)	0.0% (0)	13.8% (4)	0.0% (0)	42.9% (24)	0.0% (0)	66.7% (6)	0.4% (1)	18.4% (49)	-2.510
Female	76.7% (112)	81.6% (111)	83.9% (26)	77.8% (28)	72.2% (26)	72.4% (21)	74.1% (43)	75.0% (42)	75.0% (6)	66.7% (6)	76.3% (213)	78.2% (208)	-0.064
White	85.6% (125)	77.3% (102)	81.3% (26)	80.6% (29)	97.1% (34)	93.1% (27)	92.6% (50)	85.7% (48)	87.5% (7)	88.9% (8)	88.0% (242)	81.7% (214)	0.301
30 years or younger	56.8% (83)	59.6% (81)	46.9% (15)	57.1% (20)	45.7% (16)	55.2% (16)	36.2% (21)	41.1% (23)	62.5% (5)	55.6% (5)	50.2% (140)	54.7% (145)	-0.110
31–40 years	28.1% (41)	24.3% (33)	37.5% (12)	25.7% (9)	34.3% (12)	31.0% (9)	37.9% (22)	33.9% (19)	37.5% (3)	44.4% (4)	32.3% (90)	27.9% (74)	0.125
41 years or older	15.1% (22)	16.2% (22)	15.6% (5)	17.1% (6)	20.0% (7)	13.8% (4)	25.9% (15)	25.0% (14)	0.0% (0)	0.0% (0)	17.6% (49)	17.4% (46)	0.009
Bachelor's	59.6% (87)	57.4% (78)	65.6% (21)	72.2% (26)	77.1% (27)	58.6% (17)	58.6% (34)	69.6% (39)	50.0% (4)	44.4% (4)	62.0% (173)	61.7% (164)	0.009
Master's	24.0% (35)	27.9% (38)	21.9% (7)	22.2% (8)	20.0% (7)	20.7% (6)	29.3% (17)	19.6% (11)	50.0% (4)	55.6% (5)	25.1% (70)	25.6% (68)	0.015
Degree in AK	64.2% (88)	67.2% (86)	80.6% (25)	77.1% (27)	37.5% (12)	37.0% (10)	65.4% (34)	56.6% (30)	62.5% (5)	62.5% (5)	63.1% (164)	62.9% (158)	0.003
Did not relocate to AK	83.9% (115)	86.3% (113)	90.3% (28)	97.1% (34)	60.6% (20)	57.1% (16)	96.5% (55)	90.7% (49)	37.5% (3)	57.1% (4)	83.1% (221)	84.7% (216)	-0.073

[1] Cox index.

In most cases, UGO and BAU ECTs shared similar demographics. Most were female, of similar ages, and had earned similar credentials. Similar proportions of ECTs also earned their degree in Alaska and did not relocate to the state for their position. While the racial/ethnic background of both UGO and BAU ECTs groups was predominately white (80%), a statistically significant larger number of UGO ECTs identified themselves as white compared to BAU ECTs (88% to 82%, respectively). Finally, and as expected, UGO ECTs were statistically significantly more likely to have a formal mentor, and BAU ECTs were statistically significantly more likely to have no mentor or an informal mentor (as would be expected).

Students

The student sample consisted of students assigned to participating ECTs (as described above). District coordinators collected classroom rosters, as of October 1 each year, from eligible ECTs. In collaboration with the ECT, district coordinators "cleaned" the rosters by:

1. Removing any student who received instruction in the subject area from more than one teacher (e.g., students who had another teacher for reading or mathematics)
2. Removing any student who did not take the regular state assessment (e.g., special education students)
3. Adding any student who was enrolled as of October 1 but did not appear on the roster and/or removing any student who was not enrolled as of October 1 but who did appear on the roster (i.e., roster error)

These students comprised the denominator for calculating attrition.

At the time of randomization (first year of ECT teaching), ECTs and their students were randomly assigned to UGO or BAU groups.

In both years, the majority of students were white (at least half); Alaskan Natives were the next largest group of students. Few students were African American, American Indian, or Native Hawaiian/Pacific Islander. About half of students were female. At one point in the past three years, the majority had been eligible for free or reduced-price lunch [FRL] (about two-thirds), were not limited English proficient [LEP] (about four-fifths), or had not received special education services [SPED] (about four-fifths). Table 6 describes the demographics of the student samples included in the four confirmatory analyses.

Table 6. Demographic characteristics of students, Year 1

	Primary reading Y1		Primary writing Y1		Primary math Y1		Secondary math Y1	
Category	BAU	UGO	BAU	UGO	BAU	UGO	BAU	UGO
Race/Ethnicity[1]								
African American	5%	5%	5%	5%	5%	5%	5%	5%
Alaskan Native	10%	15%	10%	15%	10%	10%	10%	10%
American Indian	<5%	<5%	<5%	<5%	<5%	<5%	<5%	<5%
Asian	10%	10%	10%	10%	10%	5%	10%	10%
Hispanic	10%	5%	10%	5%	10%	5%	10%	10%
Native Hawaiian/ Pacific Islander	5%	5%	5%	5%	5%	5%	5%	5%
Two or more races	10%	10%	10%	10%	10%	5%	10%	5%
White	55%	55%	50%	50%	55%	60%	50%	50%
Female	49.7% (286)	48.8% (287)	49.8% (301)	47.6% (429)	48.4% (281)	51.7% (307)	46.7% (596)	49.3% (668)
Male	50.3% (290)	51.2% (301)	50.2% (304)	52.4% (472)	51.6% (299)	48.3% (287)	53.3% (680)	50.7% (687)
FRL	67.0% (386)	61.2% (360)	68.4% (414)	68.6% (618)	67.1% (389)	62.6% (372)	71.8% (916)	62.7% (849)
Not FRL	33.0% (190)	38.8% (228)	31.6% (191)	31.4% (283)	32.9% (191)	37.4% (222)	28.2% (360)	37.3% (506)
LEP	16.7% (96)	13.6% (80)	17.9% (108)	18.1% (163)	16.7% (97)	13.8% (82)	21.2% (270)	17.7% (240)
Not LEP	83.3% (480)	86.4% (508)	82.1% (497)	81.9% (738)	83.3% (483)	86.2% (512)	78.8% (1006)	82.3% (1115)
SPED	18.4% (106)	20.2% (119)	18.8% (114)	19.2% (173)	20.2% (117)	20.0% (119)	28.4% (362)	19.3% (261)
Not SPED	81.6% (470)	79.8% (469)	81.2% (491)	80.8% (728)	79.8% (463)	80.0% (475)	71.6% (914)	80.7% (1094)

[1] Percentages rounded to the closest 5 percentage points and numbers removed to protect individuals.

Table 7. Demographic characteristics of students, Year 2

	Primary reading Y2		Primary writing Y2		Primary math Y2		Secondary math Y2	
Category	BAU	UGO	BAU	UGO	BAU	UGO	BAU	UGO
Race/Ethnicity[1]								
African American	5%	5%	5%	5%	5%	5%	5%	5%
Alaskan Native	15%	10%	15%	10%	15%	10%	15%	10%
American Indian	<5%	<5%	<5%	<5%	<5%	<5%	<5%	<5%
Asian	10%	10%	10%	10%	10%	10%	10%	10%
Hispanic	10%	10%	10%	10%	10%	10%	10%	10%
Native Hawaiian/ Pacific Islander	5%	5%	5%	5%	5%	5%	5%	5%
Two or more races	10%	10%	10%	10%	10%	10%	10%	5%
White	45%	50%	45%	45%	40%	55%	45%	55%
Female	46.7% (202)	50.4% (245)	47.1% (210)	50.7% (231)	47.4% (184)	46.5% (263)	49.5% (287)	44.8% (312)
Male	53.3% (231)	49.6% (241)	52.9% (236)	49.3% (225)	52.6% (204)	53.5% (303)	50.5% (293)	55.2% (384)
FRL	69.5% (301)	70.6% (343)	70.6% (315)	70.6% (322)	76.5% (297)	66.3% (375)	70.2% (407)	60.6% (422)
Not FRL	30.5% (132)	29.4% (143)	29.4% (131)	29.4% (134)	23.5% (91)	33.7% (191)	29.8% (173)	39.4% (274)
LEP	19.6% (85)	23.5% (114)	20.9% (93)	24.8% (113)	22.2% (86)	21.2% (120)	17.4% (101)	18.1% (126)
Not LEP	80.4% (348)	76.5% (372)	79.1% (353)	75.2% (343)	77.8% (302)	78.8% (446)	82.6% (479)	81.9% (570)
SPED	20.8% (90)	19.5% (95)	20.9% (93)	19.1% (87)	21.9% (85)	20.8% (118)	29.7% (172)	29.6% (206)
Not SPED	79.2% (343)	80.5% (391)	79.1% (353)	80.9% (369)	78.1% (303)	79.2% (448)	70.3% (408)	70.4% (490)

[1] Percentages rounded to the closest 5 percentage points and numbers removed to protect individuals.

Multiyear Participation

The study actively involved participants across four school years and used data collected over six school years. Table 8 displays participation and data collection over the six-year period.

Table 8. Study participation and data collection

		2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
1	ECT Cohort 1		Y1	Y2			
2	ECT Cohort 2			Y1	Y2		
3	ECT Cohort 3				Y1	Y2	
4	Retention, fall				C1	C2	C3
5	CLASS (baseline, fall Y1)		C1	C2	C3		
6	CLASS (outcome spring Y1)		C1	C2	C3		
7	CLASS (outcome, spring Y2)			C1	C2	C3	
8	SBA (Y1 baseline)	C1	C2	C3			
9	SBA (Y1 outcome)		C1	C2	C3		
10	SBA (Y2 baseline)		C1	C2	C3		
11	SBA (Y2 outcome)			C1	C2	C3[1]	
12	Mentor group Y1		New	Returning	Returning	Returning	
13	Mentor group Y2			New	Returning	Returning	
14	Mentor group Y3				New	Returning	

Notes: Rows 1–3 show ECTs participated for the duration of two school years; during that time they remained in the condition to which they were assigned. Row 4 shows we assessed retention for each cohort at the beginning of their third year of teaching. Rows 5–7 show we collected CLASS data for the instructional practice study in the fall (baseline) and spring of ECTs' first year of teaching and the spring of their second year of teaching (outcomes in Year 1 and Year 2). Rows 8–11 show we collected data for the student achievement study for the first four years. The year prior to random assignment of cohort 1 ECTs was baseline data for the students assigned to Cohort 1 ECTs in their first year of teaching; outcome data was from the end of their first year of teaching. This was the same for Cohorts 2 and 3. Similarly, the year of random assignment of Cohort 1 ECTs was baseline data for the students assigned to Cohort 1 ECTs in their second year of teaching; outcome data was collected at the end of their second year of teaching. This was the same for Cohorts 2 and 3. Each year, school administrators assigned ECTs a new class of students. The state administered assessments annually in the spring of 2013, 2014, and 2015 (no state tests were administered in 2016). Rows 12–14 show districts hired new mentors the first three years of the study. For the implementation study, we only assessed years of experience the first year mentors were hired, and we only assessed participation in the NTC training the first two years of mentoring. All other measures included all mentors all years.

[1] Alaska did not administer a state assessment in spring 2016. The students of eligible ECTs were not included in Year 2 analyses.

Chapter 2. Differences between the UGO and BAU Conditions

Research Question

An important component of any rigorous study is identifying the different conditions into which participants are placed. In our study this translated into a research question that is anchored in implementation, and could influence impact, specifically: *How did the UGO and BAU conditions differ?*

Methods

To determine significant differences between UGO and BAU conditions we drew from interview and survey data. Each year researchers interviewed district coordinators and administrators of district-sponsored mentoring programs to learn about the regular supports available to ECTs in their districts, and specifically to ECTs assigned to the BAU condition. Using ethnographic techniques, we analyzed the content of interview responses and identified similarities and differences between mentoring opportunities available to UGO and BAU ECTs.

We also analyzed data from the annual ECT survey to determine areas of ECT experience in their first years of teaching with statistically significant differences between responses from UGO and BAU ECTs. Survey analyses combined all UGO ECT surveys across all cohorts and years and compared results to all BAU ECT surveys combined across all cohorts and years. On survey items in which ECTs were asked to select practices or topics and their impact, we analyzed responses using chi-squared distributions. For the trust scale we used a *t* test of significance. A large section of the survey included items applicable only to ECTs who had mentors. We used some of these questions to further examine what distinguished the experience of ECTs with UGO mentors as distinct from BAU mentoring (those who reported having a formal district-assigned or school-assigned mentor or an informal mentor either in their school or outside of their school).

Interview Findings

District Mentoring Support (BAU)

All districts provided ECTs with some support. Under BAU conditions, content coaches were common. Content coaches were provided to ECTs in Kenai's non-Title I schools; language arts and mathematics ECTs in Fairbanks; and special education ECTs in Mat-Su, Fairbanks, and Kenai. ECTs in Anchorage received targeted support from various colleagues based on teaching assignments. These included teacher experts, curriculum specialists, or content coaches. Sitka administrators paired ECTs with a veteran teacher to help them learn about district policies and procedures. Importantly, district-supported instructional mentoring was available to ECTs in

Anchorage and those in Title I schools in Kenai. The district coordinator reported that the design of the Anchorage mentoring program was influenced by the ASMP model. This was confirmed by annual interviews with the BAU coordinator in Anchorage. As only Anchorage and Kenai had formal mentoring programs, the following sections compare these BAU mentoring programs to UGO mentoring.

Mentor Recruitment

There was one similarity across district mentoring programs related to mentor recruitment—both the UGO and Kenai mentoring programs used full-release mentors; otherwise, the three programs had different mentor experience and caseload requirements. UAF expects UGO mentors to have at least eight years of teaching experience in Alaska. Anchorage mentors were required to have at least five years of teaching experience (this was reduced to four years over the course of the study), with three of them required to be in Anchorage. The Kenai BAU program did not have minimum requirements established for mentors in regard to their time teaching in the district or in Alaska.

Unlike UGO's full-release mentors and caseloads capped at 15 ECTs, Anchorage mentors were full-time teachers who were afforded a day of shared sub time to work with their mentees during the school day. To make it easier for mentors and ECTs to meet, beginning in Year 3, Anchorage administrators tried matching mentors with ECTs in the same building. Anchorage mentors usually had one mentee. Kenai used fully released mentors. In Years 1 and 2, the Title I mentors did not have a maximum caseload; in Year 3, the district capped caseloads at 14 ECTs.

Professional Development

The professional development required by UAF for UGO mentors was substantially more comprehensive than that provided by Anchorage or Kenai. UGO mentors typically participated in more than 25 days of professional development during their first two years of mentoring. Ongoing support was provided via Friday Forums (online presentations developed by mentors on topics of interest to other mentors) and coaching (supporting UGO implementation by mentors). Mentors in their third year of mentoring and beyond continued to participate in all training events except those specifically required for first- and second-year mentors.

Anchorage's mentoring program included up to three trainings: a one-credit graduate-level course was required for mentors; a second course was required for dyads post-match; a third course was required for dyads in their second year. Each new dyad was required to attend the training in Year 1 (and Year 2, if applicable). Anchorage did not provide other ongoing training. Mentor training in Kenai varied. When Kenai started the program, mentors attended a four-day training followed by a one-day retreat a year later. Mentors participated in monthly meetings that included reading and discussing professional literature. They also received calibration

training to use the Teachscape program from the Danielson Framework for Teaching (The Danielson Group & Teachscape, 2013).

Interactions with ECTs

The frequency and duration of mentor-ECT contact was greater in the UGO program than the Anchorage and Kenai programs. However, all programs used a standards-based approach and incorporated documenting and planning for professional growth. UAF expected UGO mentors to maintain weekly contact with ECTs and to meet face-to-face at least monthly (totaling 3.5 hours). Anchorage mentors were also supposed to document conversations, use a variety of tools to guide their mentoring activities, and engage ECTs in reflective processes at least three times a year.

In the first two years of the study, Anchorage encouraged mentors to communicate with their ECTs weekly. This was reduced to twice monthly in Year 3. Administrators encouraged twice-monthly face-to-face meetings with no minimum time requirements. As Anchorage modeled its program on ASMP, they encouraged mentors to document their conversations using a log. Mentors could use district-provided tools, open source materials adapted to meet the needs of the district, or Danielson-aligned materials. Mentors supported first-year ECTs' specific needs established in a goal-setting process and second-year ECTs' needs established in a Professional Goal-Setting Plan tied to the professional teaching standards.

In Kenai, administrators expected mentors to have monthly communication, including face-to-face meetings, of no minimum length. The Kenai program incorporated coaching strategies espoused by Knight (2009), Sprick and colleagues (2009), and Danielson (2010). In the first two years of the study, Kenai mentoring focused on practical application and best practice. Mentors worked with first-year ECTs to develop a professional development plan and conducted monthly check-ins and two observation cycles. Optional activities included ECT observation of their mentor and a grade-alike colleague. Second-year ECTs focused on implementing their professional development plan. In Year 3, Kenai altered the mentoring model to focus on bridging the gap between "knowing" and "doing" (implementation of Danielson's four domains). Mentors, with input from the ECT, developed a coaching plan and activities to support a professional goal.

Other Support

Analysis of ECT surveys revealed BAU ECTs were statistically significantly more likely to report receiving, engaging in, and/or benefitting from some school/district activities that supported their early development. These included:

- Professional development and access to district/content coaches

- Formal collaboration opportunities such as common planning time, grade-level collaboration, release time to observe other teachers, and support from their site administrator
- Informal collaboration and/or time with other ECTs in their school
- Access to resources (i.e., materials or volunteers) and university programs

They were also more likely to experience challenges a mentor might mitigate. These included low student motivation, classroom management issues, poor student attendance, and stress. Complete survey results may be found in Appendix A.

Survey Findings

Survey data on what support UGO ECTs received from mentors revealed differences between UGO and BAU ECTs and their mentors. Some findings are understandable, given the differences in the formal district-sponsored mentoring programs and the nature of school-based or informal mentoring. Others indicate important differences in terms of interaction, topics addressed, and alignment with professional and cultural standards. Appendix A contains results from ECT surveys administered in spring 2013, 2014, 2015, and 2016 (two years of surveys for three cohorts of ECTs).

UGO ECTs Were More Likely to Have a Mentor but Less Likely to Share Similar Teaching Experiences

Almost all UGO ECTs reported having a mentor, while fewer BAU ECTs did so (99% and 70%, respectively). BAU ECTs and their mentors were more likely to have experience teaching in the same grade and subject, at the same school level and school, and to have experiences working with similar student populations. They were also more likely to have similar teaching assignments and to be in close proximity to each other. On the other hand, UGO ECTs were more likely to report that they or their mentor were released from instructional responsibilities to observe others' instruction and shared common planning times (we surmise that "common planning times" were interpreted as common times during which mentors and ECTs were available, since UGO mentors were not teaching).

UGO and BAU ECTs Thought about Their Mentor's Roles Differently

UGO ECTs were more likely than BAU ECTs to think of their mentor as:

- An expert guide (73% UGO and 55% BAU)
- Role model (72% UGO and 66% BAU)
- Advocate (66% UGO and 50% BAU)
- Therapist/counselor (35% UGO and 20% BAU)

Although UGO ECTs understood the non-evaluative role of their mentor, UGO ECTs were more likely than BAU ECTs to consider their mentor as an evaluator and critic (32% and 13% UGO compared to 13% and 9% BAU, respectively). Finally, larger proportions of BAU than

UGO ECTs considered their mentor to be a colleague (82% versus 69%), which is reasonable considering they reported that their mentors were typically teachers in their school.

UGO and BAU ECTs' Interacted with Their Mentors Differently

Larger proportions of UGO ECTs reported communications with their mentor were formal (43% and 28%), while larger proportions of BAU ECTs reported communication with their mentor was mostly informal (25% versus 3%). This makes sense because UGO mentors regularly scheduled visits and interactions with UGO ECTs, whereas BAU ECTs and mentors generally had a less formal structure to their interactions. UGO ECTs were more likely to want to meet with their mentors during class time, planning time, or lunch (54%, 79%, and 53% compared to 14%, 26%, and 17%, respectively). In contrast, BAU ECTs preferred meeting before school, after school, or on non–school days (20%, 76%, and 18% compared to 12%, 55%, and 7%, respectively). Again, this parallels the UGO model in which mentors are fully released and available to meet with ECTs at their convenience.

UGO ECTs Met with Their Mentors Less Frequently but for Longer Periods

UGO ECTs most frequently met with their mentors face-to-face every two weeks or monthly (89%) for at least one hour (80%); while BAU ECTs met with their mentor more frequently—66 percent met every two weeks, weekly, or daily—but for no more than one hour (85%) (Tables 9 and 10). In addition to longer visits, the vast majority of UGO ECTs (96%) indicated working with their mentor since the beginning of the school year (August or September); a significantly smaller proportion of BAU ECTs did so (81%).

Table 9. Frequency of face-to-face visits with mentor

	Percentage (n)					
	Daily	Weekly	Every two weeks	Monthly	Occasionally	Never
BAU	15.9% (57)	15.6% (56)	34.3% (123)	25.1% (90)	8.9% (32)	0.3% (1)
UGO	0.0% (0)	9.1% (48)	45.3% (240)	44.2% (234)	1.5% (8)	0.0% (0)*

Table 10. Duration of face-to-face visits with mentor

	Percentage (n)					
	15 minutes or less	About 30 minutes	About 1 hour	About 2 hours	About 3 hours	More than 3 hours
BAU	24.0% (86)	21.8% (78)	39.4% (141)	12.6% (45)	0.8% (3)	1.4% (5)
UGO	0.6% (3)	19.1% (101)	34.0% (180)	24.3% (129)	14.2% (75)	7.9% (42)*

To maintain relationships between face-to-face meetings, UGO ECTs had more frequent distance communication (e.g., telephone, email, text) with their mentors compared to BAU ECTs: Seventy-five percent of UGO ECTs communicated via these means daily or weekly versus 49 percent of BAU ECTs who did so. These findings on duration of mentoring are important, as mentoring research suggests a relationship between greater amounts of time spent mentoring and positive outcomes.

UGO ECTs Trusted Their Mentors More Than BAU ECTs Trusted Theirs

Although statistically significant, differences between UGO and BAU teachers' trust ratings are small. However, UGO ECTs exhibited a higher level of overall trust with their mentor—specifically concerning honesty, benevolence, and reliability—than did BAU ECTs. Our annual survey included a trust tool (Hoy & Tschannen-Moran, 1999; Mitchell et al., 2009) that used a six-point scale We used ratings of "1" representing "strongly disagree" and "6" representing "strongly agree." Table 11 shows mean trust scores for the tools' five subscales, each item, and the instrument overall. Trust and professional respect is another important factor associated with more productive mentor-mentee interactions (Hobson, 2008).

Table 11. ECTs' reported trust in their mentor

Subscales and items	Mean (SD)[1] BAU	UGO
Honesty	**5.7 (0.59)**	**5.8 (0.47)***
I trust my mentor.	5.7 (0.72)	5.8 (0.51)*
I have faith in the integrity of my mentor.	5.7 (0.61)	5.8 (0.67)
My mentor keeps his or her word.	5.7 (0.59)	5.8 (0.50)*
When my mentor tells me something I can believe it.	5.6 (0.78)	5.7 (0.70)*
Benevolence	**5.6 (0.64)**	**5.8 (0.53)***
My mentor typically looks out for me.	5.6 (0.85)	5.8 (0.53)*
My mentor typically acts with my best interest in mind.	5.7 (0.68)	5.8 (0.51)*
My mentor shows concern for me.	5.6 (0.77)	5.8 (0.57)*
My mentor is unresponsive to my concerns.[2]	5.6 (0.96)	5.7 (0.97)
Competence	**5.7 (0.64)**	**5.8 (0.57)***
I am suspicious of most of my mentor's actions.[2]	5.8 (0.81)	5.8 (0.84)
My mentor is competent in doing his or her job.	5.7 (0.74)	5.8 (0.55)*
Reliability	**5.6 (0.77)**	**5.8 (0.56)***
Even in difficult situations I can depend on my mentor.	5.5 (0.91)	5.7 (0.67)*
My mentor is reliable.	5.6 (0.73)	5.8 (0.55)*
Openness	**5.2 (0.90)**	**5.2 (0.76)**
My mentor is open.	5.7 (0.70)	5.8 (0.51)*
My mentor openly shares personal information with me.	4.8 (1.44)	4.6 (1.36)
Total score	**5.6 (0.59)**	**5.7 (0.45)***

[1] We reversed the scale used by Hoy and Tschannen-Moran(1999) ("1" represents "strongly agree" and "6" represents "strongly disagree" to align with other scales in which higher numbers indicate higher levels of agreement.
[2] For reporting purposes, negatively worded items were reverse coded so that a higher rating consistently indicates a more positive attitude.
* $p \leq 0.05$ on independent t-test.

UGO ECTs Received Support from Their Mentors, in a Variety of Areas, Significantly More Often Than BAU ECTs Did from Theirs

Table 12 displays specific activities and discussion topics in which mentors and ECTs could engage. In all of the areas, UGO ECTs reported activities and discussions occurred significantly more frequently than did BAU ECTs ($p \leq 0.05$).

Table 12. Frequency of statistically significant mentor/mentee activities and discussion topics

		Percentage (n)		
	Group	Never/ occasionally	Monthly	Every two weeks/ weekly
Activities[1]				
Observe your instruction	BAU	89.1% (317)	7.9% (28)	3.1% (11)
	UGO	11.4% (60)	52.3% (276)	36.4% (192)*
Gather classroom data	BAU	84.2% (298)	10.5% (37)	5.4% (17)
	UGO	24.4% (129)	44.4% (235)	31.2% (165)*
Model lessons or strategies with your students and/or co-teach in your classroom	BAU	92.7% (330)	4.2% (14)	3.1% (11)
	UGO	79.7% (408)	12.1% (62)	8.2% (42)*
Provide you with resources and materials	BAU	44.3% (158)	19.6% (70)	36.1% (129)
	UGO	24.3% (129)	29.4% (156)	46.2% (145)*
Document your work together	BAU	43.1% (154)	19.3% (69)	37.5% (134)
	UGO	7.0% (37)	34.0% (180)	59.1% (313)*
Engage with you in goal setting process	BAU	56.9% (203)	20.7% (74)	22.4% (80)
	UGO	15.5% (82)	42.3% (224)	42.2% (223)*
Brainstorm with you ways to approach a challenge with a student or class	BAU	30.1% (107)	18.5% (66)	51.4% (183)
	UGO	11.2% (59)	29.9% (158)	59.0% (312)*
Discussions				
Observation of your instruction and/or data that were gathered	BAU	77.5% (276)	11.8% (42)	10.7% (38)
	UGO	11.1% (50)	46.3% (208)	42.5% (191)*
Issues of equity	BAU	46.5% (166)	21.6% (77)	39.1% (114)
	UGO	18.9% (100)	39.1% (207)	42.1% (223)*
Cultural awareness, values, and sensitivity	BAU	67.2% (240)	14.3% (51)	18.5% (66)
	UGO	44.2% (234)	31.0% (164)	24.8% (148)*
Working with special populations	BAU	51.5% (184)	19.3% (69)	29.1% (104)
	UGO	38.5% (204)	28.9% (153)	32.6% (173)*
Lesson planning	BAU	54.1% (193)	20.5% (73)	25.5% (91)
	UGO	47.4% (249)	28.2% (148)	24.4% (128)*
Parent communication	BAU	63.9% (228)	18.8% (67)	17.4% (62)
	UGO	54.5% (289)	28.3% (150)	17.2% (91)*
Site administrator/principal communication	BAU	66.4% (237)	15.4% (55)	18.2% (65)
	UGO	57.1% (302)	25.7% (136)	17.2% (91)*

[1] Using chi-squared, UGO ECTs were found to report all activities and discussions occurred significantly more frequently than did BAU ECTs ($p \leq 0.05$).

During mentoring sessions, compared to BAU ECTs, larger proportions of UGO ECTs and their mentors addressed issues related to classroom management (94% versus 88%), pedagogy (76% versus 55%), and district logistics and procedures (64% versus 56%). These are important findings as they reinforce other research studies on mentoring that identify the beneficial role of formative feedback cycles and educative mentoring practices (Feiman-Nemser , 2001).

UGO ECTs Were More Likely to Indicate Their Mentoring Was Standards-Based and Culturally Relevant

Compared to BAU ECTs, UGO ECTs were more likely to strongly agree that their work with their mentor was:

- Standards-based: guided by professional teaching standards (76% UGO versus 57% BAU) and included content, performance, and cultural standards (62% and 41%)
- Culturally relevant: supported their understanding of the culture(s) in their community (56% UGO and 48% BAU)

Summary of Differences between the Experiences of UGO and BAU ECTs

The UGO and BAU conditions differed in numerous ways. While ECTs in both conditions had access to mentors, Anchorage and Kenai mentors had lower experience requirements and participated in less initial and ongoing training. Anchorage mentors had low caseloads (usually one ECT per mentor); however, mentors retained all of their teaching responsibilities. Kenai's fully released mentors typically had caseloads of about 14 ECTs. In both districts, at least monthly contact was encouraged, but program administrators required no minimum contacts (face-to-face or otherwise). Possibly because BAU ECTs did not have UGO mentors, district and school administrators might have provided them access to other supports to encourage their early development, or BAU ECTs might have felt they benefitted more from receiving them. In districts without formal mentoring programs, these supports often included access to some type of content coach.

The experience of ECTs with regards to professional support during their first two years of teaching was different for the UGO and BAU ECTs. BAU ECTs had more in common with their mentors than UGO ECTs. This was influenced by the Anchorage mentoring program, which matched mentors and ECTs more closely than the ASMP program did. Additionally, school and informal mentors were more likely to be colleagues, working in similar situations that put them in regular contact with each other. Differences in the nature of these relationships likely impacted the ways ECTs viewed their mentors and the formality of their communication. ASMP's fully released mentors could work with ECTs during the school day and for longer periods of time. The fact that they were balancing caseloads likely required them to spread contact out to monthly or bimonthly visits. Mentors of most BAU ECTs in the Anchorage program or school-based mentoring taught full time and could only work with their ECTs outside of the school day.[2] School and informal mentors likely met with ECTs in a more impromptu manner as they interacted with each other during the school day or work week. Therefore, their meetings were more frequent, but shorter.

BAU and UGO ECTs engaged in similar activities with their mentors, but UGO ECTs consistently did so with more frequency. This could stem from a variety of reasons, including differences in the time availability of UGO mentors, ASMP mentor-ECT contact requirements, UGO mentors' additional classroom experience, and their training and professional development. The latter encouraged and prepared them to engage in a variety of practices on a regular basis, including standards-based goal setting; instructional observations with data

[2] It is important to note that while a component of the Kenai mentoring program used fully-released mentors, this comprised a small number of ECTs in total.

collection and debriefing; and conversations focused on equity, diversity, and problem solving. While all three formal mentoring programs did use a standards-based approach, the ASMP training particularly emphasized linking all conversations to a variety of standards, building relationships, and responding to needs expressed by their ECT. With their training, UGO mentors reportedly addressed standards more consistently; were better able to engage with their ECTs; built more trust; and, ultimately, impacted ECT practice in areas meaningful to their ECTs ($p < 0.05$).

ECTs in the BAU and UGO conditions underwent substantially different experiences in their first two years of teaching. BAU ECTs were more likely to report receiving, engaging in, and/or benefitting from some school and district activities that supported their early development and were more likely to experience some challenges a mentor might mitigate. UGO-mentored ECTs reported significant impact on a broad range of mentor-mentee activities and discussion topics.

Chapter 3. Implementation Study

Key aspects of the National Evaluation of i3 (NEi3) guided how we measured implementation. This included ensuring that the study was well-designed, well-implemented, and independently conducted. NEi3 guidance in accordance with high standards of educational research also indicates that implementation studies should provide information about the key elements and the approach of the project, which facilitates replication or testing in other settings. This chapter presents our findings from the implementation study conducted during the first three years of UGO, from summer 2012 through spring 2015.

Research Questions

To assess how well UAF implemented UGO as planned, we developed four questions that were aligned with the actions of the project and focused on the project's key components, as included in the logic model:

1. To what extent were key components—mentor recruitment/assignment, mentor participation in professional development, mentor interactions with their ECTs, and mentor use of formative assessment tools—implemented as planned?
2. What conditions facilitated or challenged implementation?
3. How much variation in implementation was there across mentors?
4. In what ways were key components implemented differently from the model as planned?

Methods

Education Northwest researchers worked with UAF researchers and administrators to develop a logic model. Together, using the logic model as a basis for measuring implementation fidelity, we created a fidelity of implementation (FOI) matrix. The FOI matrix includes stated expectations from UAF (indicators) for implementation of UGO's four key components. We describe these key components and indicators in appendix B.

In addition to the key components and indicators, the matrix also identifies three levels of implementation—*low*, *adequate*, and *ideal* based on implementation of the ASMP model. We established numeric thresholds for *low* ("0"), *adequate* ("1"), and *ideal* ("2") implementation: "0" represents the absence or unacceptable implementation of indicators. A "1" represents *adequate* implementation of the indicators and is the minimal expectation. A rating of "2" represents meeting the criterion for *ideal* implementation of the indicators.

We scored all UGO mentors in all five districts on each key component's indicators. We then used the results of the mentor-level scores to calculate the percentage of mentors with fidelity scores of "1" or "2" for each indicator. To determine key component fidelity, we averaged the

percentage of mentors with fidelity scores of "1" or greater across indicators. We considered the component implemented with fidelity if the average of all indicators was at least 70 percent of mentors scoring "1" or greater and at least 51 percent of mentors scored "1" or greater for each indicator. If these two criteria were not met, we considered the component not implemented with fidelity.

We used qualitative and quantitative strategies to gather data on the four key component areas of implementation (shown in Figure 1 and in the sidebar). We conducted interviews with mentors, district coordinators, and UAF administrators (including professional development trainers and coaches) to help interpret findings from analyses of the FOI matrix and to answer the four research questions.

Appendix C contains tables describing project-level findings for each of the 16 indicators included in the four key components of the UGO FOI matrix. Appendix C also contains an overview of the FOI tables.

Key Components and Indicators from Logic Model Used in FOI

ASMP UGO guides district in the recruitment and assignment of highly qualified mentors

- Experienced teachers (at least 8 years in Alaska)
- Full–release mentoring: dedicated time for mentoring
- Caseload of no more than 15 ECTs per mentor

Mentors participate in in-depth professional development

- Fully attend Orientation (~2 days/year)
- Fully attend Wrap Up (~3 days/year)
- Fully attend mentor training, using the ASMP approach/materials based on the New Teacher Center (NTC) model (4 academies/year for 2 years)
- Fully attend ASMP training (3–4 sessions/year)
- Participate in Friday Forums (at least 10/year)
- Communicate monthly with coach
- Fully participate in shadowing sessions (2 sessions as first-year mentor and at least 1 in subsequent years as a mentor)
- Participate in coaching, using mentor formative assessment tools

Mentors interact with ECTs

- Communicate at least weekly with ECTs
- Provide face-to-face interaction (at least 3.5 hours/month)

Mentors use formative assessment tools with ECTs*

- Document conversations through Collaborative Assessment Log
- Use formative assessment tools to support ECTs and gather classroom data
- Support reflective practice through Individual Learning Plan, Mid-Year Review, and Professional Growth Reflection

**Note:* Connect all work to Standards for AK Teachers, AK Cultural Standards, and/or Continuum of Teacher Development.

Findings

Below we report our fidelity of implementation findings, by key component with information on indicators. (See Figure 1 or the sidebar for indicators associated with key components.) We also include facilitating conditions and challenges stakeholders experienced during implementation. When applicable, we address differences in implementation across mentors. Finally, in each section we document the overall differences we identified between AK DEED's implementation of the ASMP model and UAF's implementation of the UGO model of the mentoring project.

Mentor Recruitment and Assignment

In all three years, UAF implemented this key component with fidelity. At the indicator level, ideal fidelity was more likely to be reached in hiring mentors with appropriate teaching experience and providing dedicated mentoring time; maintaining ideal caseloads was slightly more problematic. Across the three years, we found one instance in which a district hired a mentor with less than eight years of teaching experience in Alaska and two instances in which a district assigned mentors to non-teaching duties in addition to their mentoring. UAF, however, found maintaining ideal caseloads of 12–15 ECTs for full-time mentors slightly more problematic. While most district coordinators assigned mentors ideal caseloads per their full-time equivalent (FTE), when this was not the case, mentors were more likely to have smaller than larger caseloads.

Prior experiences, existing and new relationships, and a willingness to collaborate facilitated implementation. District coordinators said their knowledge of district policies, practices, and staff members helped them effectively engage in their work to hire mentors, identify ECTs, and assign caseloads. Districts hired district coordinators, who were long-term employees that understood the complexities of their district and its policies. Over the course of the three years of measured implementation, district coordinators underscored the importance of having deep knowledge of their districts and internal processes and having existing professional relationships within the district, as well as an openness to building new relationships. Working with various district and school contacts, human resources, and teachers' unions provided them access to potential hires (both mentors and ECTs), mentor interviewing and contracting support, and venues that allowed them to recruit ECTs and obtain their consent to participate in the study.

Likewise, mentors reported that the position was a "good fit" for them because they had previously been ASMP mentors, were long-time district employees who knew district policies and professional contacts, and/or were experienced mentors or professional development providers under other models.

> *Last year I was a district coach. I went through the application process previously for the district. I had all of last year to interpret what I was doing as a coach. I was working in a school with nine teachers. I kind of lived with them in the same building (I had previously taught in for 20 years). I was a resource for field trips, community connections, how to do things within the district.* (Mentor)

UAF staff reported sharing the AK DEED mentor application, interview protocol, and scoring rubric with districts and district coordinators and helping them think about who in their districts might be a good fit for the UGO model. They also mentioned the importance of being a good listener. This helped the UAF staff, district coordinators, and researchers to develop close partnerships and allowed the team to truly problem solve, as all parties felt comfortable being open and honest in voicing challenges and concerns.

> *The rubric, application, and questions that UAF shared were really helpful. We modeled our hiring after that, but incorporated many district pieces into the process. I spend some time talking with those who deal with contracts and purchasing. We incorporated the standard procedure of hiring during the interview process. Even though it is a contract position, it is a good model and we thought it would feel familiar to the many district retirees who were applying for the positions. So we began with UAF materials and morphed it to fit district policy and procedures.* (District coordinator)

District coordinators also mentioned the importance of communication among district administrators (including principals). Keeping everyone informed about the model and implementation in the district was key. Similarly, having existing relationships with district and school administrators and educators aided in communication, for both mentors and district coordinators.

Not knowing the number of ECTs districts would hire each school year made hiring mentors and assigning caseloads challenging; this was exacerbated by restrictions on the number of hours districts could hire mentors to work. While human resource departments were partners in identifying and recruiting ECTs, these systems were not perfect. Some district coordinators had trouble predicting the full number of vacant positions and to what extent they might be filled by ECTs versus experienced teachers. The former challenge varied depending on district size.

> *Our district is small enough that I have a staffing changes sheet in front of me at all administrator meetings. We go over [staffing needs] in spring with transfers to buildings, retires, and new hires. We basically keep a running record of that.* (District coordinator)

Some district coordinators also had difficulty identifying ECTs once hired. Not all districts tracked this in their hiring process and venues for bringing together new hires (e.g., orientation) varied or were nonexistent.

> *Last year we had a new hire orientation meeting that allowed us to identify ECTs. That meeting was cancelled this fall, so it was a huge challenge identifying ECTs. I had a lot of meetings with human resources to figure out how they identify them (the ECTs in the new hires). We tried a couple of different ways to look at the data they collected, but every time our lists were never clean. Now I have access to the application software and can match against other documents.* (District coordinator)

In hiring mentors, district coordinators had to meet the various requirements of UAF, their district, teachers' union, and state. AK DEED hires only full-time ASMP mentors to meet the needs of ECTs in rural districts. However, in UGO, various situations in the urban districts (e.g., limits on the number of hours retired or independent contractors could work) required UAF to adjust the model to include the use of part-time mentors with smaller caseloads. Ultimately,

UGO mentors held mentoring positions that varied in FTEs, including full-time regular employees, part-time regular employees, and full-time and part-time annually contracted staff.

Estimating the number of ECTs districts would ultimately hire by fall, in the summer, was necessary to allow districts to hire adequate numbers of mentors in time for them to participate in required summer training sessions. If these estimates were off, district would hire—and UAF would train—too many or too few mentors for temporary or permanent part-time or full time positions and assign caseloads that could be too large or too small. Some years, districts needed to hire additional mentors, who UAF then trained after the start of the school year. Some mentors went from part-time to full-time positions, and caseloads typically changed to accommodate late district hires. Defining appropriate caseloads for varying full-time equivalency positions was an additional challenge.

> *At one point, the district coordinator was unsure if she could hire all of us. Some mentors were already hired full-time so they asked me if I would consider part-time.* (Mentor)

Balancing caseloads was sometimes tricky because of ECTs' differing years of experience and teaching settings. Usually, ASMP mentors have full-time caseloads of at least 15 first- and second-year ECTs assigned to a variety of positions (e.g., elementary, secondary, general education, English language arts, mathematics, and science) and locations (multiple districts). Some district coordinators tried to assign UGO mentors caseloads that matched their background and experience, but they were not always successful in doing so.

> *[I] tried a little to give mentors a geographic caseload, but that was difficult because I did not know where the next batch of ECTs would be.* (District coordinator)

Mentors underscored the challenge. Generally, they felt their caseload was "just right." They reported their full-time caseload was most reasonable when it included 12 to 15 ECTs. It was easiest when the majority of their caseload included second-year ECTs. Finally, it was hardest when they had several particularly needy first-year ECTs, ECTs at many different locations, or ECTs who taught in an area or level with which they had less experience.

> *Twelve is good for this year, because I have at least four that are second year. Last year, with just first-year teachers, it was a drain emotionally. First-year teachers just need more attention. Not every first-year teacher needs a lot of attention, but generally they need more of my time, more of my encouragement. This year it's a little bit more balanced. Maybe that's because I'm getting it, too.* (Mentor)

> *We had other discussions about matching by subject, levels of expertise, geographic considerations. We tried to divide it up that way, even though it does not always work. Even though there are three ECTs in one school, it does not mean you can meet them all the same day.* (Mentor)

Mentor recruitment and assignment differences between ASMP (rural) and UGO. The ASMP model was developed and refined in response to needs of ECTs in village/rural schools in Alaska. Of particular interest to UAF are collateral findings from this study related to differences between ASMP, as traditionally implemented in predominately rural districts, and UGO, implemented in urban districts. While UGO adopted the key components of the ASMP model (as described in the logic model), adaptations were made to accommodate the urban setting. With this context in mind, we identified some areas in which UAF implemented the key component of mentor recruitment and assignment differently from the model as planned (e.g., AK DEED's implementation of ASMP):

1. Individual districts hired and contracted with UGO mentors, whereas AK DEED hired and contracted with ASMP mentors.
2. UGO mentors could work varying levels of part-time, with appropriately reduced caseloads. ASMP mentors were only full-time.
3. District coordinators more frequently matched UGO mentors to ECTs based on grade level, school level, or content-area experience. This was especially true in the area of special education. This is not an AK DEED practice.
4. UGO served a much broader array of ECTs, including physical education, music, and shop teachers, as well as teachers hired to provide instructional interventions to small groups of students. In rural/bush settings, a small academic team often teaches these instructional areas, and traditional academic teachers make up the vast majority of ECTs with ASMP mentors.
5. UGO mentors benefitted from having a district coordinator who had ready access to school and district administrators to enhance the visibility of, and support for, mentoring at the district level.

Mentor Participation in Professional Development

In all three years, UAF implemented this key component with fidelity. At the indicator level, ideal fidelity was more likely to be reached in regard to mentors participating in professional development events than in coaching activities. Full participation (attending all scheduled sessions) in professional development events such as Orientation, NTC (Academy) and ASMP training, Friday Forums, and Wrap Up was attainable for most mentors most of the time. When mentors missed these events, they were more likely to not attend rather than partially attend these events. They were most likely to miss Orientation.

Documentation on UGO coaching activities suggests UAF's implementation of coaching was less than ideal. Coaching includes shadowing mentors, communicating with them monthly, and engaging them in reflective practice. We have more evidence that shadowing occurred, because we supplemented coaches' documentation with mentor reports during the annual interviews. However, based solely on coaching documentation, implementation of the other coaching activities varied. In Year 2, coaches engaged in monthly communications more frequently than in other years. In Year 3 they participated in reflective practice activities more frequently than in previous years.

Mentors appreciated the project's high-quality training. District coordinators, mentors, and UAF staff members all commented on the quality of the training. Mentors reported the professional development was high quality and provided them the necessary time to learn about and practice using mentor language and tools. Several appreciated the variety of formats used. The Academy sessions were especially valuable because they incorporated small- and whole-group time, modeling, and role-playing, and afforded time to learn from other mentors. This time to socialize, network, and engage in small-group work was especially valued in terms of support and camaraderie.

> *It is fabulous. That is the best word I can come up with. It is not just the content. It is being able to physically get together with the other mentors. Besides working with them in the training, it is even outside of the training when you are talking about your ECTs and their issues and strategies and resources. It is just great. Knowing there are other people out there doing the job; you do not feel like you are alone. It's invaluable training. The content is really, really good. All of the tools we are receiving have been invaluable. Just the support. It is great to have a coach who is there for you and a partner who is there for you.* (Mentor)

Because mentors perceived the training as so worthwhile, none wanted to miss out.

> *It's just such good training. I never have to say they have to come.* (District coordinator)

Mentors appreciated the support they received from their peers and peer coaching partners. Many mentors appreciated the coaching partner aspect of the project and saw it as more conducive to their learning and needs than the regular coaching component. With coaching partners, UAF assigned mentors a mentor colleague who often lived in a geographically similar area and was a first line of support (first coaching partner, then coach, then UAF administrators). Mentor partners were regularly used in Friday Forums in Year 3, but were a less-emphasized, regular part of the mentoring model from the beginning.

> *Fabulous, they can say things to each other that no one else knows about. It is very helpful. Coaching partners provide someone to talk with about things that are tough. They have each other's backs.* (Mentor)

While most mentors felt supported by their coaches and reported coaches had fulfilled the expectations of the model, it was the most unevenly reported aspect of the professional development package. This was reportedly due to mismatching coaches to mentors and varying district policies regarding visitors in schools.

> *The first time my coach shadowed me, they took data. That was what propelled me to be more confident about taking data. That was very helpful. I have one teacher in particular*

that is pretty openly resistant to mentoring and has been pretty upfront about it, which is fine. My coach has helped me think about ways to work in that relationship, to be helpful but not aggressive … I was just searching for the email this morning. My coach sent me an excerpt from an email of an interaction with a [similar ECT]. I really appreciated that. It was personal. I think when you share your personal experience with someone who is struggling, it's helpful. (Mentor)

Scheduling issues affected training attendance and mentors' work with each other and their ECTs. Discrepancies between mentors' hire dates, previously planned trips, and other commitments and scheduled professional development dates caused some mentors to miss required training, most often Orientation, the first Academy, and shadowing. The multiday training events took mentors away from their regular work schedule and made it difficult for them to engage, as expected, with their ECTs. Part-time mentors were especially challenged with the amount of training required.

[Professional development should be scheduled] as early as possible at the first of the year to get the dates for the next year set. Sometimes travel plans [of potential mentors] are made way in advance. We wanted the training dates set in the application for mentors before we posted it, but that did not happen fast enough. (District coordinator)

UAF's effort to reduce costs in Year 3, by moving the in-person training events from Fairbanks to Anchorage, resulted in shortened sessions. The condensed training time also reduced contact time between mentors because there were fewer days of training that were more tightly scheduled. With fewer training days there was less collaboration time, either formal or informal. To some extent, some districts might have mitigated the challenge of mentor-mentor communication by arranging meetings outside of the formal UGO trainings and providing office space for mentors to meet informally.

Some training content was repetitious and not all training formats met the needs of attendees. Some attendees reported that training content was at times repetitive or less applicable to their work. Mentors specifically reported concerns about repetition in the second set of the four NTC academies. Mentors also perceived Friday Forums in Years 1 and 2 as less applicable to their work. This prompted changes in the structure and content of these sessions to address concerns. In rating and discussing the professional training, mentors made comments such as:

Excellent. Academy 1–4, 5 and 6—relevant to what we do, pace is just right, no lag time, presenters are well-prepared, respectful of their professionalism … I wonder if there is enough information to fill eight academies. (Mentor)

Average; it is a lot of repetition. The first two years we had the full academies; once we are done with the academies I do not feel a lot of it is necessary. What is necessary is the face-to-face contact with the other mentors, which we don't get this year; being able to tap other experts in the area is very valuable, now I feel it's busy work. So same or more time

with other mentors but less busy work with them. In Fairbanks academies, the best PD was just talking to each other outside the formal activities. This is totally missing from the project now. (Mentor)

UAF staff members and trainers spoke to the importance and challenge of delivering content geared to the experience of the mentors (first year, second year, third year, or more) and keeping the training relevant and engaging for all participants.

Finally, we identified one area in which UAF and UGO implemented the key component of mentor participation in professional development differently from the model as planned (i.e., AK DEED's implementation of ASMP). As UGO districts had multiple mentors in close proximity to each other, some UGO mentors had additional opportunities to meet and share with each other, formally and informally. This was not designed into the model, but was appreciated by UGO mentors as an additional professional support.

Mentor Interactions with Their ECTs

In all three years, UAF implemented this key component with fidelity. At the indicator level, ideal fidelity was consistently reached in regard to maintaining weekly communication. Mentors less frequently accumulated 3.5 hours of face-to-face interactions with their ECTs. With the exception of some ECTs who took leave or discontinued mentoring during the school year, all mentors maintained weekly communication with their ECTS. Some mentors struggled to accumulate 3.5 hours of face-to-face interactions with their ECTs. In all years, the mentors who did not accumulate 3.5 hours of face-to-face time were evenly distributed across most districts. Some mentors consistently failed to use (or document their use of) tools with their ECTs.

Developing routines was an important aspect of implementation that aided mentors in meeting the project's contact requirements. Routines allowed mentors to be persistent, consistent, and efficient.

In my calendar, on one side I have a vertical chart with all my ECTs and then every week I have highlighted and noted if I've emailed them, if I have a face [-to-face] visit with them, a phone call to them. I circle if they responded. Then I can see at a glance who has had a face visit, who has emailed, etc. It is very easy for me to see who needs attention. I am not leaving anybody out. (Mentor)

I have been very clear from the beginning with my ECTs about the expectation and what we do. I have gotten better at emails; learned to give them short email that asks specific things about their practice. I take notes during the observation and include follow-ups on that in emails. (Mentor)

Flexibility in implementing the model helped overcome a challenge related to ECT's tight schedules. Mentors took their jobs seriously and did their best to meet all the project

expectations. However, their work—and that of their ECTs—pulled them in many directions, which made it difficult to find time to communicate. UGO mentors appreciated that their ECTs had a lot on their plates and could not always find an hour a week, two hours every two weeks, or four hours a month when they could work face-to-face with their mentor. They understood that ECTs sometimes could not give up their planning time to meet and that other school/district requirements (e.g., professional development, professional learning communities, team planning, union contracts) took priority. They also realized that ECTs had additional responsibilities that occurred after school—some related to school (e.g., coaching) and others related to their personal lives (e.g., children). Mentors said that flexibility and being realistic about what they could accomplish in their day-to-day work were factors that helped them implement the model.

> *[A challenging area] on site visits is pre- and post-observation discussions. In reality, ECTs rarely respond that the time I am coming is going to work, let alone what they would like me to focus on, and they do not have time after school to do it, either. Few have lesson plans to look at in advance. A lot of the post-observations discussion at the elementary level happens informally between the observation and the time when we do the CAL. Many of my elementary ECTs have centers, so we have a lot of time when they are monitoring to touch base on what works and does not work. It happens in bits and pieces rather than in one big chunk. It's good discussion, with their think-alouds and my questions and dialoguing in between things, and it's building a relationship with them. As a result, that is my reality versus the structured pre/post discussions.* (Mentor)

Finally, an important aspect of flexibility included finding ways to communicate with and respond to their ECTs at times, and in ways, that were most convenient and meaningful to the ECT.

> *Finding chunks of time to talk with ECTs. Some only want to put in their contracted time and it's hard to get time with them; others are willing to meet outside of school at restaurants, coffee shops. It's hard to find time to meet around class, lunch, and planning time.* (Mentor)

> *[We were told to meet face-to-face with our ECTs] once a month. I see all of them (but one) two, three, sometimes four times a month. Face-to-face visits are just as easy as an email. My ECTs prefer it. I have three men that are terrible about email. I can more easily visit.* (Mentor)

District coordinators appreciated that their mentors could be flexible with their time to best meet the needs of the ECTs they supported. Being full-release mentors definitely aided them in doing so.

Training supported effective mentoring. We specifically asked mentors about the extent to which the professional development prepared them to work with their ECTs, and mentors

overwhelmingly agreed that it did. It provided them with increased ability to find entry points in conversations with ECTs and to use sentence/question "stems" and a framework for engaging in appropriate instructional, collaborative, or facilitative conversations. Training gave them knowledge about how the different tools worked and practice in using them before going out in the field. It also highlighted the importance of integrating reflection into their work with ECTs on a regular basis, not just when using the designated reflective practice tools.

> *I learned to do the tools using them in a variety of ways, practice and role playing, reflective conversations, instructive, facilitative, collaborative role. This mentoring training taught me the reflection model and that I'm going to weave in and out between the three instructive, facilitative, collaborative roles—that has been very helpful to me. The academies build on each other and that message has come through. I'm using the three different models and integrating them with reflection.* (Mentor)

Finally, we identified some areas in which UAF and UGO implemented the key component of mentor interactions with ECTs differently from the model as planned (i.e., AK DEED's implementation of ASMP):

1. UGO mentors had the opportunity to engage in more frequent face-to face interactions (which is more like the NTC model than the ASMP model used in rural settings), but they often found it difficult to find the time to do so.
2. ECT/mentor relationships may focus more on instructional issues in UGO. In contrast, they might include more personal and social aspects in the rural settings, where mentors often spend overnights or multiple days on site.
3. UGO mentors supported a broader array of cultures in urban settings, rather than the Alaska Native populations that are the focus of ASMP mentors.
4. UGO mentors were often teachers who had retired from the district they mentored in and only mentored in that one district. This provided them the opportunity to support their ECTs in targeted district initiatives. ASMP mentors work across multiple districts and often to do not have the same in-depth knowledge of various district initiatives.
5. To learn about district initiatives, ASMP mentors intentionally developed relationships with their ECTs' site administrators. This was a less-emphasized component of the UGO model. Many UGO mentors reported that gaining access to site administrators was difficult, especially at the secondary level.
6. Urban schools have more supports/resources available to ECTs than village/rural schools.
7. UGO mentors worked in one district, while ASMP mentors work across multiple districts. Meeting communication requirements was sometimes difficult for UGO mentors who could only juggle one district calendar, as compared to ASMP mentors who can juggle multiple calendars. For example, a vacation day in one district might be an instructional day in another district, allowing the mentor to visit that ECT while school is in session.

Mentors Use of Formative Assessment Tools

In all three years, UAF implemented the use of formative assessment tools with fidelity. **Ideal** ***fidelity was consistently reached in using Collaborative Assessment Logs (CALs) to document mentors' weekly communications with their ECTs and engage them in reflective practice. Using, or documenting their use of, tools was less likely to be at*** **ideal** ***levels.*** With the exception of some ECTs who took leave or discontinued mentoring during the school year, almost all mentors completed CALs and used the project's reflective practice tools with all of their ECTs. Some mentors struggled to use (or document their use of) other formative assessment tools. In all years, the mentors who did not use (or document their use of) tools were evenly distributed across most districts, but some mentors consistently failed to use (or document their use of) tools with their ECTs.

Relationship-building was a key aspect of engaging with ECTs. Mentors discussed the importance of establishing relationships with ECTs as the prerequisite of changing practice.

> *[In mentoring] part is personality, part is previous experience, part is counseling. The most import component is the relationship. I just focused on building relationships. I am pretty sure all my ECTs value our relationship. It is not just having a mentor, it is someone you trust is confidential [and who] you can count on. I can have difficult conversations with them.* (Mentor)

Mentors' ability to rely on professional judgement and be flexible in their work facilitated tool use. District coordinators, mentors, and UAF staff members appreciated that mentors could use NTC, ASMP, and district tools and that having a larger toolbox provided them with the necessary data they needed to help ECTs see what was happening in their classrooms.

> *I supplement the tools. There are a certain set of tools the district uses, similar but easier to use then the ASMP tools. In 15 minutes, I can collect a variety of these data (i.e., engagement, positive ratio of interactions, and opportunities to respond).* (Mentor)

> *Six of my ECTs teach students with disabilities. Some of the tools are not formatted for a nonacademic setting. The curriculum is functional tools in a real-life setting.* (Mentor)

Mentors also mentioned ways that they improvised their data collection, often on the fly.

> *Some of the teachers I work with are kind of different or have different settings. Instead of using the actual tool, I have taken data on a piece of paper, and I have modified the way I take the data to the environment and to the teacher. I just sit down with the teacher and say, "Today, I took engagement data and this is what I came up with. How does that look to you? What are you thinking?" Try to get a conversation going from there.* (Mentor)

Finally, UAF staff members discussed how effective managing helped ensure fidelity of implementation. During shadowing, coaches observed the use of tools and the frequency of

communication between mentors and ECTs. They also reviewed mentors' documentation of their work to ensure mentors were appropriately contacting their ECTs. They shared this information at management meetings, and if needed, UAF administrators were available to work with mentors to address any concerns.

Training supported implementation. As discussed earlier, we specifically asked mentors about the extent to which the professional development prepared them to work with their ECTs, and mentors overwhelmingly agreed that it did. Training provided time to practice and explore how they could use different tools in different situations.

> *Data collection is in the training. We customize the data collection to the teacher and you need to find out what that teacher needs and the training allows us to find ways to help teachers think about their practice. (*Mentor)

UAF staff members echoed the value training and coaching provided for mentors to effectively interact with ECTs and use tools.

Mentors found the project's formative assessment and reflective practice tools valuable. While many mentors commented that documenting their work was a time-consuming part of their job, many saw the value in it, especially when it was done collaboratively with their ECTs.

> *I work very hard on it. It takes me at least 1 1/2 hours per ECT each week. I want it to connect to the standards. I want it to be useful to the ECTs. I want it to be something they can show to their administrator. I want the ECT to know they have been heard. The different tools let us show the ECTs the amazing things they are doing. I have second-year teachers, and so much of what they are doing—the tools let them see that not only did they accomplish their goals [but they also] addressed other issues. It helps them see their growth.* (Mentor)

> *The tools definitely help to open up conversations. I feel like I'm definitely moving them forward, working with them where they are at and having them discover what do to do next. The tools are a great eye-opener and no one feels threatened by them.* (Mentor)

In addition, they noted the formative assessment tools provided immeasurable support in engaging with ECTs to move their practice forward.

> *If you ask: What's working? You get "Everything is fine." If you ask: Any challenges? You get, "No." If they feel like its evaluation you do not get anywhere with them. But, if I link my comments to observable behavior then they open up; you are not judging them. Observable behaviors that we can present to them in a non-evaluative way—students were talking or you needed to talk loudly because they were talking—what can you do about that? You'll be hoarse at end of day, tired at end of day … Then I'll present something as a strategy.* (Mentor)

Finally, using web-based tools allowed mentors to complete some of the documentation requirements when they had a break between ECT meetings on site. In doing so, it freed their evenings up for other things.

Documentation and logistical issues were time consuming and often took time away from mentoring. Both district coordinators and mentors commented on this challenge. Every year, mentors discussed the demands of their job and the extent to which they devoted more than 40 hours a week to their work. In addition to documenting their own work, other areas that caused mentors to juggle their workload included scheduling, traveling to and conducting face-to-face visits, maintaining weekly communication with ECTs, and balancing their time with the needs of ECTs. UAF staff members acknowledged that travel and time constraints were challenges to implementation.

> *I spend a lot of time on the paperwork, recording the face-to-face and observation information. That takes time. It's like an IEP on steroids.* (Mentor)

The form and functionality of tools was sometimes questionable. One reason mentors incorporated district tools into their work was that they could not find ASMP tools that met the specific needs of the ECTs' classroom, school, or district. This was most prominent when a district emphasized a particular approach to professional growth, as well as in some special education classrooms.

Mentors and UAF staff members identified problems with the usability and accessibility of online tools. At the beginning of UGO, some tools were only paper-based, while others were available in both paper and electronic formats. While some mentors lamented that they needed more tools in an electronic format, others described difficulty in collecting classroom observation data only via computer.

> *[It's challenging] collecting data on what we agreed upon. I will notice that this is happening, and I will add tallies or draw a circle with arrows on who was talking to whom. I often improvise tools as needed, that is harder to do on a computer.* (Mentor)

> *This year is the first time I haven't attached all the tools that I complete with the teacher because of the issues with the tool suite and the amount of time to enter them.* (Mentor)

Documenting and reporting interactions with ECTs varied among mentors. Some mentors and UAF staff members acknowledged that some mentoring approaches or personal dispositions lent themselves to documenting and reporting mentor interactions with ECTs better than others. This included conversations that happened early in the relationship-building process, documentation that did not lend itself to monitoring implementation, and informal data collection.

My data collection, I spend a lot of time building relationships instead of collecting data. (Mentor)

Finally, we identified one area in which UAF and UGO implemented the key component of mentors use of Formative assessment tools differently from the model as planned (i.e., AK DEED's implementation of ASMP). UGO mentors used a larger set of formative assessment tools, some that were district-developed and that supported school or district initiatives.

Implementation Study Summary

Evidence from the full spectrum of data sources indicates that ASMP successfully implemented UGO across all three years of systematically measured fidelity of implementation. The logic model accurately reflected implementation with effective program adaptations to an urban setting. UAF implemented most indicators with *ideal* fidelity. It implemented a few areas with *adequate* fidelity.

District administrators selected mentors who had at least eight years of teaching experience in Alaska and fully released them from teaching responsibilities to devote their full attention to mentoring. However, the caseloads they carried were not always *ideal*. This was often due to the difficulty of districts not knowing in advance the number of ECTs they would hire in a given year, which in turn made it difficult to hire the appropriate number of mentors to work with them. Usually, when caseloads were less than *ideal*, then full-time mentors had fewer than 12 ECTs, rather than more than 15. Accordingly, some ECTs might have received more intense intervention as their mentor had additional time to spend with them.

Mentors received the *ideal* amount of in-depth professional development by attending high-quality training events that provided them with background knowledge, training, and practice in engaging with ECTs and using the project's reflective practice and formative assessment tools. In addition, there was time to network and engage with other mentors. These training events included Orientation, Academy week, Friday Forums, and Wrap Up. Mentors' participation in coaching—and coaches' documentation of those activities—was more variable. Mentors indicated their coach met with them during face-to-face visits with ECTs; however, the extent to which they communicated twice monthly and engaged in reflective practice was less uniform. The degree to which mentors reported needing/benefiting from this support, particularly in their second year of mentoring, also varied.

Mentors conducted and documented weekly communications and engaged in reflective practice activities with their ECTs at consistently *ideal* levels. They met the criteria for *adequate* implementation in meeting with ECTs face-to-face and using formative assessment tools. Balancing caseloads, especially ECTs in varied locations and teaching positions, with ECT availability was a definite challenge. Mentor flexibility to use their best judgement to decide when and how to engage ECTs, at the best time and using the most appropriate tools, mitigated this challenge to some extent. Mentors found the tools valuable, especially as entry points for

difficult situations. This value outweighed requirements for completing documentation that mentors sometimes felt was menial work. Engaging in the minimum face-to-face time requirements and documenting use of formative assessment tools were two areas in which we found mentor differences, which we attribute, at least in part, to different mentoring styles.

Across the project, ASMP staff members, district coordinators, and mentors acknowledged the importance of relationship building and ongoing communication and collaboration. These facilitated engaging in many aspects of work. On the administrative side, this included hiring mentors and identifying ECTs. On the mentoring side, this included developing as mentors, building trust with ECTs, and engaging in appropriate conversations with ECTs to move their practice forward. We can attribute many differences between implementation of the ASMP and UGO models to the fact that UGO is a district-level program, takes place in urban settings, and involves educators with well-defined teaching assignments but varied responsibilities. This is in contrast to the traditional ASMP model, which primarily takes place in rural schools in which ECTs may teach a variety of subjects and serve in numerous roles in the school.

Chapter 4. Intervention Study

In this study we make a distinction between implementation and intervention. As described in the previous chapter, we use "implementation" to describe activities over which UAF had control, such as the actions described in the logic model (see Figure 1). Yet, we recognize that the intervention itself—mentoring—actually happens once mentors are out in the field working directly with ECTs. At that point, implementation is in the hands of the mentors. For this reason, the intervention study aimed to illuminate the "black box" of what really happened in UGO mentoring relationships. In this chapter we use terminology that is grounded in intervention science (Dunst, Trivett & Raab, 2013) to describe the interactions, activities, and actions mentors authentically engaged in with their ECTs.

By examining verbal interactions between UGO-mentored ECTs and their mentors we can better describe the nature of the UGO mentoring intervention. And, because effective implementation (e.g., training and tools to use in an intervention such as mentoring) does not guarantee effective intervention (e.g., high-quality mentoring in practice) we also gain a deeper understanding of how UGO mentors applied their training to their actual work with ECTs (Dunst et al., 2013; Fixsen et al., 2005).

Research Approach

We framed the intervention study with this research question: *What patterns in UGO mentor-ECT conversations are associated with improved ECTs' instructional practice?* One of the strengths of our overall research design is its breadth. We gathered, analyzed, and synthesized many different types of data about implementation, intervention, and impact. We also provided formative feedback from implementation and intervention data to UAF to support the project's ongoing work. Based on this rich collection of data, we chose to take a mixed-methods approach to the intervention study. We used dyad conversation analyses to explore patterns in mentor-mentee conversations and their association with improved classroom practice. This included a combination of audio recordings of mentor-ECT post-observation conversations and instructional observation data.

Intervention Analysis

During their second year of mentoring, we asked UGO mentors to record four conversations with each of their second-year ECTs—two recordings each semester. These were to be post-observation debrief conversations. To ensure the recordings reflected the diversity and breadth of the work mentors did, we requested that mentors space recordings for a given ECT at least one month apart and that mentors capture a variety of different types of conversations. Mentors used audio recorders and either uploaded the audio files to a secure upload site, emailed files to us, or shared them via a Google Drive folder.

To take a deeper look at the UGO intervention itself, we conducted an analysis of the audio recordings and leveraged impact data to provide nuanced, actionable information to the project. The approach drew from CLASS data to inform our analysis. The CLASS data are based on scoring the instructional practice observations. Using results from the CLASS we examined two different groups of dyads: those with high rates of growth on the CLASS (referred to as Gliders) and those with low rates of growth (referred to as Sliders). By carefully studying audio recordings within these two groups, we aimed to detect contrasting patterns of how the dyads interacted, what actions mentors took to push ECTs' practice, and what qualities ECTs exhibited that promoted or inhibited mentor work. Audio recordings were transcribed to facilitate coding using qualitative software.

The analysis took a post-hoc, mixed-methods approach. We used ECTs' spring-to-spring growth on the CLASS to group the dyads, audio recordings from the highest and lowest growth dyads, and an emergent qualitative analysis of the recordings to define—from the ground up—what mentors and ECTs did together that could contribute to the CLASS outcomes. Taken together, the CLASS data and audio analysis provide a profile of mentoring experiences of UGO ECTs in Glider dyads and those in Slider dyads.

Data Sources

For this study, we drew on data from audio recordings of mentor-ECT post-observation conversations combined with scores from instructional observations using the CLASS. The study used multistage sampling with audio recording collected from all UGO-mentored ECTs in their second year of mentoring and CLASS data gathered from a stratified random sample of ECTs. Because we only have audio recordings for UGO-mentored ECTS, the analyses include UGO-mentored ECTs only. The full sample of ECTs with CLASS and audio data was 93.

Methods and Participants

We selected 10 ECTs (approximately 10% of the CLASS sample) who were at either end of the spectrum on their CLASS scores: five ECTs Gliders, who gained the most, and five ECT Sliders, who gained the least, based on differences in average fall Year 1 CLASS domain scores and average spring Year 2 CLASS domain scores.

The CLASS uses a 7-point scale. A low score on the CLASS is 1–2, a midrange score is 3–5, and a high score is 6–7. Changes of a whole point are considered quite large. Gliders posted average gains ranging from 1.84 to 3.55 points. These are notable gains. The Sliders regressed on all three CLASS domains. They had the greatest decreases in total CLASS scores among the full sample of all those who were video recorded and had scored observations. Average decreases ranged from 1.98 to 3.85 points on the rating scale.

Audio recordings of post-observation conversations between ECTs and mentors were transcribed and imported into Atlas-Ti 8.0, a software program designed for the management of qualitative data. Blind to whether recordings were from Glider or Slider dyads, we coded

mentor/mentee conversation data. We developed a coding scheme initially based on an earlier analysis of audio recordings, adding inductive coding to identify emergent differences and themes. A full description of the methodology is forthcoming in a separate paper (anticipated submission is the end of 2017).

Findings

Findings from this small exploratory study revealed pronounced differences between conversations of Glider and Slider dyads. With a limited sample of dyads, the purpose of our analyses was to investigate patterns in UGO mentor-ECT conversations that were associated with improved ECT instructional practice. Further research on these patterns is needed to better understand the many factors associated with Glider and Slider dyads. Three areas of interest emerged in examining differences between Glider and Slider dyads: dyad relationship dynamics, priority topics discussed in dyads, and types of mentoring activities in which dyads engaged.

Dyad relationship dynamics and interaction. ECTs in Glider and Slider dyads were similar in terms of their relationship dynamics, as measured by mention of placement challenges, resistance to change, and attitude/disposition in general. Using the post-observation audio transcripts, researchers identified similar challenges in both dyad groups related to placement (e.g., fit in the school, grade level, content area). We detected comparable amounts of resistance to change expressed among Glider and Slider ECTs and similar attitudes (positive or negative) in both groups regarding teaching and mentoring. The similarity between the two groups in the area of dyad dynamics is important as it established that the Glider ECTs were not simply "easier" ECTs to work with or fortunate to be placed in better teaching situations. What we don't know from the audio recordings is anything about the compatibility of the mentor-mentee relationship or the personal connections that mentors and ECTs may have felt.

Glider dyads interacted with each other differently than Slider dyads. First, mentors and ECTs responded to each other more often. ECTs in Glider dyads were more engaged in conversation with their mentors (619 more instances of back-and-forth dialogue, .85 more instances per minute). Mentors in Glider dyads also affirmed or empathized with ECTs more frequently than Slider dyads (452 more instances, .64 more instances per minute). The Glider dyad conversations were longer, more focused on instruction, and more responsive to each other as compared with Slider dyad conversations. Glider dyads also had longer conversations than Slider dyads. On average, Glider conversations were about 5 minutes longer. In a 10-month academic year, this translates to 50 additional minutes of mentoring conversation. Fifty minutes is equivalent to almost two additional conversations per year, and as mentioned in the literature review, the amount of time spent mentoring is associated with better mentoring outcomes.

Priority topics discussed in dyads. The post-observation conversations Glider dyads engaged in were qualitatively different from Slider dyads' conversations in what they discussed. The Glider dyads focused their conversation more on instruction and students. Among Glider

dyads the topic of conversation was on instruction or practice in 606 more instances than the Slider dyads. That translates to .85 more instances per minute than the Slider dyads. Mentors in Slider dyads sometimes missed or minimized ECTs' instructional challenges as they came up in conversation. Among Glider dyads discussion topics more often addressed student outcomes, work, or behavior. Glider dyads engaged in 521 more instances of discussing student outcomes, work, or behavior than Slider dyads (.76 more instances per minute than the Slider dyads). Glider dyads also problem solved together as mentor and ECT more often (252 more instances, .38 more instances per minute). Slider dyads sometimes had conversations that were only lightly facilitated by mentors and less often confronted problems of practice. Finally, Glider dyad conversations more frequently targeted ECTs' successes and strengths. Mentors in Glider dyads focused on positive things going on in the classroom and with the ECTs' instructional practice (265 more instances, .37 more instances per minute).

Types of mentoring activities. Glider dyads were also qualitatively different from Slider dyads in the actions they took. Glider dyads more frequently focused on solving problems of practice and targeting successes and strengths of the ECT. Mentors in Glider dyads more often redirected conversations to the positive, especially with regard to students. Glider dyad conversations picked up on challenges and addressed them, collaboratively generating next steps or new approaches for ECTs to try. Mentors in Glider dyads directly facilitated conversations when needed, not letting discussions get derailed by extraneous conversations or avoidance of difficult topics.

Intervention Study Summary

The intervention study examined what actually happened as mentors and ECTs interacted. The analyses of CLASS and audio data identified discernible differences in UGO dyad conversation patterns associated with improved ECT instructional practice. Glider dyads were qualitatively different from Slider dyads in the way they interacted with each other, the topics they discussed, and the actions they took. They had longer conversations, focused more explicitly on instruction and students, responded to each other more often, and engaged as peers more frequently than the Slider dyads.

Findings from this small exploratory study offer a window into the black box that is UGO intervention. Although not detailed in this overview of the study, the ASMP cycle of mentoring is apparent in the interaction patterns among Glider dyads. Future research is needed to develop an understanding of the conversation patterns that emerged among dyads and how they may be linked to instructional practice as measured by tools such as the CLASS.

Chapter 5. Impact Study

Research Questions

The main purpose of this research was to estimate the impact of ECT participation in UGO. Three research questions guided the impact study:

1 What is the impact of ECTs' participation in UGO on remaining in the teaching profession in Alaska? (RQ1)

2 What is the impact of ECTs' participation in UGO on their instructional practices? (RQ2)

3 What is the impact of ECTs' participation in UGO on the reading, writing, and mathematics achievement of their students? (RQ3)

Methods

Intervention and BAU Conditions

ECTs within each cohort were randomly assigned to intervention (UGO) or control (business as usual, or BAU) conditions within each district. ECTs in the intervention condition received two years of mentoring through UAF and did not receive other formal mentoring offered in their schools or districts. ECTs assigned to the control condition received no UGO mentoring, instead they receive BAU mentoring, defined as mentoring typically provided to new teachers in the absence of UGO. Formal BAU mentoring varied in quality and intensity at the two districts that provided it, and there was no formal BAU mentoring in the other three districts.

Analytic Methods and Models, Statistical Adjustments, and Missing Data

In the following section, we discus analytic models by research question. All models include cohort-by-district fixed effects that reflect the random assignment of teachers within blocks formed by cohort and district.

RQ 1: What is the impact of ECTs' participation in UGO on remaining in the teaching profession in Alaska?

Confirmatory outcome:

1. Whether or not an ECT participant remained a teacher in Alaska in the third year of teaching.

Exploratory outcome:

2. Whether or not a Cohort 1 ECT remained a teacher in Alaska in the fourth and fifth year of teaching.

The outcomes are binary variables.

Analytic models:
For each of the two outcomes (retained in Year 4 and retained in Year 5), the logistic model at the teacher level is:

$$log\frac{p(x)}{1-p(x)} = \beta_0 + \beta_{1,2}Cohort\ dummy\ variables + \beta_{3-6}District\ dummy\ variables + \beta_{7-14}Cohort\ X\ District\ interaction\ variables + \beta_{15}Treatment\ indicator$$

In each model, the coefficient for the treatment indicator estimates the impact of participating in UGO on retention.

Analyses
We conducted one confirmatory and three exploratory analyses to examine the impact of ECTs' participation in UGO on remaining in the teaching profession in Alaska. Our confirmatory analysis compared the retention rates of UGO and BAU ECTs at the beginning of their third year in the teaching profession, after UGO ECTs received two years of UGO mentoring and BAU ECTs received two years of the traditional BAU program. For our exploratory analyses, we calculated retention for Cohort 1 ECTs only, in their third, fourth, and fifth year of teaching.

Attrition
We had low attrition (for details see Consort Charts in Appendix D). Some ECTs were missing outcome data because we did not have their state identification number, which were missing from the files we received from AK DEED (including the two years they were teaching in the study).

Baseline equivalence
Although attrition was below the level required to establish baseline equivalence, we did compare the baseline equivalence of ECTs based on the WWC protocol acceptable measure for teacher retention outcomes of teaching experience (U.S. Department of Education, 2016). All treatment and control ECTs began the study in their first year as classroom teachers (i.e., no difference between groups at baseline). Additionally, research suggests two related but separate correlations to retention: Alaska teachers who earn their degree in Alaska (Hirshberg & Hill, 2013) have higher retention than those who do not earn their degree in Alaska, and Alaska teachers who do not relocate to Alaska for work have higher retention than those who do relocate to Alaska for work (Boyer, 2012, p.49). These descriptives regarding whether ECTs earned their degree in Alaska and relocated to Alaska for work are displayed in Table 5 in Chapter 1. At baseline, there were no differences (effect sizes of 0.00 and -0.07, respectively).

RQ 2: What is the impact of ECTs' participation in UGO on their instructional practices?

Outcomes:
1. CLASS scores on the domain of Emotional Support
2. CLASS scores on the domain of Classroom Organization

3. CLASS scores on the domain of Instructional Support

Instructional practice scores were obtained from ratings of video recordings of teachers in their classrooms, which were assigned by raters trained in the CLASS observation system. Outcome variables are means of the scores on the components that form each of the three domains covered by the CLASS.

Analytic models:
As before, in each model the coefficient for the treatment indicator estimates the impact of participating in ASMP on teachers' instructional practices. Results are produced separately for elementary and secondary levels.

$$y_i = \beta_0 + \beta_1 x_i + \beta_{3,4} Cohort\ dummy\ variables + \beta_{5-8} District\ dummy\ variables + \beta_{9-16} Cohort\ X\ District\ interaction\ variables + \beta_{17} Treatment\ indicator + e_i$$

Where:
y_i = the outcome value on emotional support, classroom organization, or instructional support for teacher i
β_0 = the intercept
$x_{i,1}$ = value of baseline measure on emotional support, classroom organization, or instructional support, for teacher i
$\beta_1, \beta_2, \beta_k$ = regression coefficients
β_{15} = estimate of impact of ASMP on on emotional support, classroom organization, or instructional support
e_i = error term for teacher i

Analyses
We conducted three confirmatory analyses to examine the impact of ECTs' participation in UGO on their instructional practices. Analyses used results of instructional observations as measured by the CLASS. For our confirmatory analyses, for the three CLASS dimensions (emotional support, classroom organization, and instructional support), we conducted pooled analyses of ECT's scores at the end of their second year of teaching. We included all Cohort 2 and Cohort 3 ECTs who were randomly assigned to instructional recordings prior to their first year of teaching.

Attrition
We had a moderate but acceptable attrition rate (27.6%). Attrition was below the level required to establish baseline equivalence; however, these statistics are shown in table 15. To further increase the precision of the analytic model, we included the baseline as a covariate. We were missing outcome data for ECTs who dropped from the study prior to video recording in spring of their second year of teaching. We also had missing outcome data for those ECTs who were recorded in their first year of teaching but assigned to classrooms in their second year of teaching in which we made a priori decisions to exclude from video recording. Furthermore, all

districts in Year 2 excluded special education teachers from video recording. We also excluded physical education teachers from video recording because it was difficult for teachers to exclude from the lessons the students who did not have permission to be video recorded. Other reasons for not video recording ECTs included: students who were involved in the juvenile justice system or were dropouts, human error, ECTs who declined to be video recorded after agreeing to be recorded, and illness. One special education teacher in the UGO condition assisted students in the classroom of another video recorded ECT in the BAU condition. Since we could not attribute CLASS scores to the "pushed in" teacher, we excluded the teacher from the analysis.

RQ 3: What is the impact of ECTs' participation in UGO on the reading, writing, and mathematics achievement of their students?

Outcomes:

The outcome variables for RQ3 are student achievement scores obtained from AK DEED. Reading, writing, and mathematics scores were collected for grades 4–6. Mathematics scores were collected for grades 7–10. These data were available for each study year. Baseline scores were collected annually from the summer of 2012 to the summer of 2015. Note that the baseline scores in reading and writing were collected for grades 3–5. The baseline score in mathematics was collected for grades 3–9.

Alaska changed its state tests from the Standards Based Assessment (SBA) to Alaska Measures of Progress (AMP) during the course of this study. The SBA was used in the spring 2014 for the last time. As a consequence of this change, depending on the cohort, the baseline and the outcome scores could both be in SBA (e.g., Cohort 1, Year 2 students) or could be a mixture of SBA and AMP (e.g., Cohort 2 ,Year 2 students). This complication forced us to take additional steps to analyze student data pooled across all three cohorts.

SBA and AMP measure student competency in different content areas. Alaska did not equate them. Furthermore, state tests typically measure different content areas for different grade levels and are generally not vertically equated. As a consequence, we established concordance between SBA and AMP and also across different grades through standardization, then performed a pooled impact analysis.

Specifically, the pooled analysis process involved the following steps:

1. Convert student-level scores on state tests (SBA or AMP) into z-scores for each test year, using state-level means and standard deviations within subjects and grades.
2. Estimate the impact separately for each cohort and grade. (In other words, for each cohort-by-grade combination.)
3. Pool the impact estimate across cohorts and across grades, using the precision-weighting method.

For example, the pooling process for estimating the overall impact of "*ECT's two-year participation in UGO on the reading performance of primary grade students*" involved:

1. Converting state reading test scores into z-scores, for each year and for each grade. There will be a total of 18 (3 x 3 x 2) standardizations, as the reading test scores will consist of data from three cohorts of students in grades 4–6, each with baseline and outcome scores.
2. Estimate the impact separately for each cohort and for each grade, which will result in nine (3 x 3) separate impact estimates.
3. Aggregate the nine impact estimates using the precision weights, which will be the inverse of the squared standard error associated with each impact estimate.

The second and third steps were combined by including cohort and grade as design variables in the impact analysis model for RQ3 to reflect pooling of test scores. The model includes the treatment indicator (UGO vs. BAU). Covariates include the baseline test score and student demographic variables such as gender, race/ethnicity, and FRL status. In addition, random assignment of teachers within blocks formed by cohort and district is reflected in the model by the indicator variables representing the cohort-by-district interaction.

The impact analysis utilizes two-level hierarchical linear modeling to account for the nesting of students within teachers.

Joiners. The impact study assigned ECTs to conditions randomly. However, it is important to understand the implications for randomization at the student level arising out of when students were "attached" to ECTs relative to the timing of randomization of teachers. For Year 1, students were randomly assigned if they were "attached" to ECTs at the time teachers were randomized to conditions. On the other hand, in Year 2 students cannot be considered to be randomized because that summer, principals knew the treatment status of ECTs and could have steered students to teachers accordingly. As a result, Year 2 students would be considered study "joiners".

Contrasts. The impact study for student achievement includes a total of 10 contrasts from our original design plan. All are between students in the classroom of the UGO ECTs versus those in the classroom of BAU ECTs. Six of the contrasts estimated the impact at the end of the first year of teaching, by pooling the end-of-first-year data from the classrooms of ECTs in Cohorts 1–3 (pooling the 2012-13 data, 2013-14 data, and 2014-15 data). These six contrasts are for exploratory impact analyses. The other four contrasts estimated the impact at the end of the second year of teaching by pooling the end-of-second year data from the classrooms of ECTs in Cohort 1 and 2 within each educational level (pooling the 2013-14 data and 2014-15 data). These four contrasts are for confirmatory analyses. (Alaska did not administer student assessments in 2015-16.)

Additionally, the impact study for student achievement included exploratory analyses not originally written into the design plan. The additional exploratory analyses for primary reading

and secondary mathematics estimated the impact at the end of the first year of teaching, as described above. All contrasts are shown in Table 13.

Table 13. Contrasts per design plan and additional exploratory contrasts

	Subject	Level	Year	Role
1	Reading	Primary	2	Confirmatory
2	Writing	Primary	2	Confirmatory
3	Math	Primary	2	Confirmatory
4	Math	Secondary	2	Confirmatory
5	Reading[1]	Primary	1	Exploratory
6	Reading[2]	Primary	1	Exploratory
7	Writing	Primary	1	Exploratory
8	Math	Primary	1	Exploratory
9	Math	Secondary	1	Exploratory
10	Math[3]	Secondary	1	Exploratory (race by treatment interaction)[1]

[1] This contrast is for the full sample.
[2] This contrast estimates the impact of first-year, UGO-mentored ECTs on primary students' reading achievement as compared to students of first-year BAU ECTs who had no formal mentor. Contrast is exploratory because it was not part of our original design plan.
[3] Examined separately for white, Hispanic, American Indian, Alaska Native, and multiracial students
Note: The four comparisons for the confirmatory analysis address different combinations of subjects and grade levels. As a result, *p*-values for the impact estimates were not adjusted for multiple-comparisons.

The analytic model for student achievement is a student-within-teacher mixed model with the same general form for each contrast:

Level 1 (student) model:

$$\begin{aligned} y_{ij} = \beta_{0j} + \beta_{1\mathrm{j}}(Baseline_{ij}) + \beta_{2-3j}(Cohort\ indicators_{ij}) \\ + \beta_{4-10j}(Race-ethnicity\ indicators_{ij}) + \beta_{11-14j}(District\ indicators_{i,j}) \\ + \beta_{16\mathrm{j}}(Economic\ disadvantage_{ij}) + \beta_{17\mathrm{j}}(Male_{ij}) + \beta_{18-20\mathrm{j}}(Grade\ indicators_{ij}) \\ + \beta_{21\mathrm{j}}(Attendance_{ij}) + \beta_{22-29j}(Cohort\ by\ district\ \ indicators_{ij}) \\ + \beta_{30\mathrm{j}}(Treatment_{ij}) + r_{ij} \end{aligned}$$

Level 2 (teacher) model:

$$\begin{aligned} \beta_{0j} = \gamma_{00} + u_{0\mathrm{j}} \\ \beta_{1j} = \gamma_{10} + u_{1\mathrm{j}} \end{aligned}$$

The mixed model form is:

$$\begin{aligned} y_{ij} = \gamma_{00} + \gamma_{10}(Baseline_{ij}) + \gamma_{2-3,0}(Cohort\ indicators_{ij}) \\ + \gamma_{4-10,0}(Race-ethnicity\ indicators_{i,j}) + \gamma_{11-14,0}(District\ indicators_{ij}) \\ + \gamma_{16,0}(Economic\ disadvantage_{ij}) + \gamma_{17,0}(Male_{ij}) + \gamma_{18-20,0}(Grade\ indicators_{ij}) \\ + \gamma_{21,0\mathrm{j}}(Attendance_{ij}) + \gamma_{22-29,0}(Cohort\ by\ district\ \ indicators_{ij}) \\ + \gamma_{30,0}(Treatment_{ij}) + u_{0j} + r_{ij} \end{aligned}$$

For economy, the formulation above ignores unique effects on each student-level slope due to teachers.

The major coefficients of interest are:
Y_{ij} = the outcome for student i within teacher j
γ_{30} = the estimated impact of the treatment on student i within teacher j
u_{0j} = unique increment to the intercept associated with teacher j
r_{ij} = residual associated with student i within teacher j

Analyses
We conducted four confirmatory and six exploratory analyses to examine the impact of ECTs' participation on the reading, writing, and mathematics achievement of their students. For our confirmatory analyses, we analyzed state assessment scores from primary reading, writing, and math and secondary math scores of students of ECTs at the end of their second year of teaching.

Attrition
Attrition for primary reading, writing, and math and secondary math students of ECTs at the end of their second year of teaching was low (10.0%, 10.9%, 11.1%, and 12.4%, respectively). Attrition was below the level required to establish baseline equivalence; however, these statistics are shown in table 18. To further increase the precision of the analytic model, we included the baseline as a covariate. Students were dropped from the analyses if they were missing outcome data (students who did not participate in the state assessments) or covariate data. For exploratory analyses we analyzed the reading, writing, and mathematics state assessment scores for the students of ECTs at the end of their first year of teaching (after the first year of exposure to the treatment). We also analyzed data for students of different race/ethnicities and in districts without formal mentoring programs.

Findings

UGO ECTs Were Retained as Teachers in Alaska Public Schools at Higher Rates Than BAU ECTs, but Not at Statistically Significant Levels

UGO ECTs were retained in teaching at a higher rate than the BAU group. For all ECTs in their third year of teaching, we found an 80.5 percent retention rate for UGO ECTs compared to a 76.6 percent retention rate for BAU ECTs. While this finding indicates the UGO group had a higher retention rate than the BAU group, it represents a non-statistically significant difference (at the level of $p < 0.05$) with an effect size of 0.16. Table 14 displays the post-intervention statistics for the full sample of ECTs assigned to the UGO and BAU conditions.

Because we had three years of retention data for Cohort 1 ECTs, we were able to analyze their retention over a longer period (fall 2015, 2016, and 2017). Our analyses show that in all three years, UGO ECTs had higher, but non-statistically significant retention rates (80.5%, 72.7%, and 68.8%) compared to BAU ECTs (74.3%, 62.9%, and 65.7%). Compared to ECTs third year of teaching, retention was lower for both groups in their fourth year of teaching. In their fifth year

of teaching UGO ECTs still had higher retention compared to BAU ECTs, but BAU ECTs had higher retention than in their fourth year of teaching. By their fifth year in the teaching profession, about two-thirds of UGO and BAU ECTs remained in the profession. The effect size for Cohort 1 ECTs in their fourth year of teaching (0.274) suggests differences that may be substantively important but not statistically significant, based on guidelines established by the *What Works Clearinghouse (*WWC*)* (U.S. Department of Education, 2014).

Table 14. Estimated impact on teacher retention

	UGO group		BAU group		Estimated effects		
Outcome measures	**N**	**Mean (standard deviation)[1]**	**N**	**Mean (standard deviation)**	**Impact estimate (standard error)**	***p*-value**	**Effect size[2]**
Retention Year 3 (All cohorts, pooled)	267	0.805 (0.397)	252	0.766 (0.424)	1.294 (0.282)	0.236	0.156
Retention Year 3 (Cohort 1 only)	77	0.805 (0.399)	70	0.743 (0.440)	1.431 (0.568)	0.367	0.216
Retention Year 4 (Cohort 1 only)	77	0.727 (0.448)	70	0.629 (0.487)	1.576 (0.561)	0.201	0.274
Retention Year 5 (Cohort 1 only)	77	0.688 (0.466)	70	0.657 (0.478)	1.152 (0.406)	0.687	0.085

[1] Teacher level standard deviations calculated from sample shown in table.
[2] Cox index.
[3] Confirmatory contrasts are included in shaded rows.

No Statistically Significant Differences between UGO and BAU ECTs Were Found on Instructional Practice as Measured by the CLASS

For the pooled sample of ECTs, the CLASS domain scores of emotional support, classroom organization, and instructional support for ECTs in the fall of their first year of teaching were higher for the BAU group than the UGO group. Scores fell in the midrange (3–5), and trends mirrored national trends with higher scores in the emotional support and classroom organization domains and lower scores in the instructional support domain. Effect sizes for the pooled sample ranged from -0.16 to -0.26. In regard to confirmatory contrasts, we established baseline equivalence for the pooled K–10 ECT sample for the classroom organization and instructional support domains, but not for the emotional support domain. Table 15 displays the pre-intervention, baseline statistics for the impact analysis sample for each contrast.

Table 15. Pre-intervention sample sizes and characteristics for the analytic sample of ECTs in instructional practice analysis

Baseline measures (CLASS)[1]	**UGO group**				**BAU group**				**Effect size[3]**
	Sample sizes		**Sample characteristics**		**Sample sizes**		**Sample characteristics**		
	Number randomly assigned	**Number in impact estimate**	**Un-adjusted mean**	**S. D.[2]**	**Number randomly assigned**	**Number in impact estimate**	**Un-adjusted Mean**	**S.D.**	
ES Y1	70	52	4.632	0.618	64	45	4.761	0.646	-0.202
ES Y2[4]	NA	51	4.619	0.617	NA	46	4.784	0.658	-0.256
CO Y1	70	52	5.756	0.759	64	45	5.907	0.518	-0.228

Baseline measures (CLASS)[1]	UGO group				BAU group				Effect size[3]
	Sample sizes		Sample characteristics		Sample sizes		Sample characteristics		
	Number randomly assigned	Number in impact estimate	Un-adjusted mean	S. D.[2]	Number randomly assigned	Number in impact estimate	Un-adjusted Mean	S.D.	
CO Y2	NA	51	5.760	0.766	NA	46	5.907	0.512	-0.221
IS Y1	70	52	3.213	0.566	64	45	3.307	0.601	-0.159
IS Y2	NA	51	3.209	0.571	NA	46	3.327	0.610	-0.198

[1] CLASS as the baseline measure. ES, emotional support domain; CO, classroom organization domain; IS, instructional support domain.
[2] S.D. is teacher level standard deviations calculated from unadjusted statistics from impact estimate sample.
[3] *Hedges G.*
[4] Confirmatory contrasts are included in shaded rows.

Post-intervention statistics show that BAU ECTs at the end of both their first and second years of teaching obtained higher scores—but not at statistically significant levels—on the three CLASS domains, with effect sizes that ranged from -0.32 to -0.14. In the domains of emotional support and classroom organization, differences were larger at the end of Year 1 than Year 2. The difference between the instructional support scores of BAU and UGO ECTs was larger in Year 2 than in Year 1. Again, most scores fell in the midrange (3–5). The classroom organization scores of the BAU group in Years 1 and 2 fell in the high range (6 or 7). Trends for the Alaska teachers continued to mirror national trends with higher scores in the emotional support and classroom organization domains and lower scores in the instructional support domain. Table 16 displays the post-intervention statistics for the impact analysis samples, which were less than what was expected. No statistically significant differences were found.

Table 16. Post-intervention outcomes for the analytic sample and estimated effects of UGO on ECTs' instructional practices

Baseline measures (CLASS)[1]	UGO group		BAU group		Estimated effects		
	Mean	Standard deviation[2]	Mean	Standard deviation	Impact estimate (standard error)	*p*-value (degrees of freedom)	Effect size[3]
ES Y1	4.478	0.818	4.716	0.849	-0.144 (0.137)	0.297 (11, 85)	-0.283
ES Y2[4]	4.481	0.700	4.592	0.821	0.047 (0.139)	0.737 (11, 85)	-0.144
CO Y1	5.782	0.786	6.004	0.573	-0.126 (0.109)	0.251 (11, 85)	-0.317
CO Y2	5.884	0.612	5.987	0.642	-0.018 (0.112)	0.873 (11, 85)	-0.163
IS Y1	3.105	0.674	3.245	0.603	-0.131 (0.118)	0.270 (11, 85)	-0.217
IS Y2	3.048	0.537	3.212	0.604	-0.165 (0.113)	0.148 (11, 85)	-0.286

[1] ES, emotional support domain; CO, classroom organization domain; IS, instructional support domain.
[2] *Teacher level standard deviations calculated from unadjusted statistics from impact estimate sample.*
[3] *Hedges G.*
[4] Shaded rows identify confirmatory contrasts.

ECTs Report that UGO Mentoring Positively Impacted their Instructional Practice

In the annual survey, we asked ECTs to report the extent to which participating in different activities and discussing specific topics with their mentor was influential on their instructional practice. UGO ECTs reported a statistically significant greater influence ($p < 0.05$) in regard to face-to-face visits, distance communication, brainstorming, observing instruction, collecting data, goal setting, documenting their work together, discussing observations, and discussing equity (Table 17).

*Table 17. Mentoring activities with significantly more influence on teaching practice**

		Percentage (n)		
Mentoring activity	**Group**	**Not at all/ Hardly at all**	**Some**	**Quite a bit/a great amount**
Brainstorm with ECT ways to approach a challenge with a student or class	BAU	2.4% (8)	25.0% (85)	72.7% (247)
	UGO	1.3% (7)	13.6% (71)	85.1% (446)
Collect classroom data	BAU	10.4% (15)	50.0% (72)	39.6% (57)
	UGO	2.4% (12)	31.9% (159)	65.7% (327)
Discuss equity issues	BAU	3.8% (11)	43.9% (127)	52.3% (151)
	UGO	3.2% (16)	29.6% (149)	67.3% (339)
Discuss observations of ECT's instruction and/or data that were gathered	BAU	6.1% (12)	48.5% (95)	45.4% (89)
	UGO	1.6% (7)	20.1% (88)	78.4% (344)
Document ECT/ mentor's work together	BAU	19.5% (46)	41.1% (97)	39.4% (93)
	UGO	6.4% (32)	35.5% (179)	58.1% (293)
Engage in face-to-face communication	BAU	3.4% (12)	35.2% (123)	61.3% (214)
	UGO	2.5% (13)	25.0% (130)	72.6% (378)
Engage with ECT in a goal-setting process	BAU	4.5% (11)	39.6% (97)	55.9% (137)
	UGO	3.1% (16)	26.6% (138)	70.3% (365)
Engage with ECT in distance communication	BAU	17.7% (53)	47.0% (141)	35.3% (106)
	UGO	10.0% (13)	47.4% (237)	42.6% (213)
Observe ECT's instruction	BAU	8.7% (14)	44.7% (72)	46.6% (75)
	UGO	3.3% (17)	26.2% (135)	70.5% (363)

*Note: Mentoring activities and discussion topics that UGO ECTs reported as having statistically, significantly greater influence ($p < 0.05$ using chi-squared) on their practice than BAU ECTs.

UGO ECTs were also more likely to indicate their mentoring was, in general, impactful. Compared to BAU ECTs, UGO ECTs were more likely to agree their work with their mentor was beneficial to their teaching (79% UGO versus 67% BAU strongly agreed). Additionally, they attributed larger proportions of their success to their mentor (66% UGO versus 54% BAU). UGO-mentored ECTs also indicated having a mentor (formal or informal) enhanced their teaching at higher rates than BAU ECTs (94% UGO versus 49% BAU). Complete data tables may be found in Appendix A.

These results provide ECTs' perspective on the positive impact of having a mentor. Classroom observation identified no statistically-significant differences in instructional practices between UGO ECTs and BAU ECT. However, across mentoring activities, UGO ECTs believed their mentors had an influence on their teaching at rates that were statistically significantly higher than the BAU ECTs.

Student Achievement Was Generally Higher for Students of UGO-Mentored ECTs, and the Achievement of Some Student Groups Was Positively Impacted at Statistically Significant Levels

The baseline scores of primary students (grades 4–6) of UGO ECTs on the reading, writing, and mathematics state assessments were typically lower than the scores of students of BAU ECTs (effect sizes ranged from 0.01 to 0.14). The baseline scores of secondary students (grades 7–10) of UGO ECTs on the mathematics state assessment were higher than those of BAU ECTs (effect sizes ranged from 0.31 to 0.48). We established baseline equivalence for the primary samples, but not the secondary samples. Table 18 displays the pre-intervention baseline statistics for the impact analysis sample for each contrast. Confirmatory contrasts are shaded in the table.

Table 18. Pre-intervention sample sizes and characteristics for the analytic sample in student achievement analyses

Baseline measures[1]	UGO group				BAU group				Effect size[3]
	Sample sizes		Sample characteristics		Sample sizes		Sample characteristics		
	Number of students randomly assigned	Number of students in analytic sample	Un-adjusted Mean	S.D.[2]	Number of students randomly assigned	Number of students in analytic sample	Un-adjusted Mean	S.D.	
Reading PY1	673	588	0.121	0.910	633	576	0.130	0.926	-0.019
Reading PY2[4]	549	486	0.000	0.875	472	433	0.046	0.912	-0.051
Writing PY1	1009	901	0.086	0.949	659	605	0.113	0.958	-0.028
Writing PY2	513	456	0.054	0.854	499	446	0.028	0.859	0.030
Math PY1	677	594	0.216	0.951	650	580	0.083	0.941	0.141
Math PY2	630	566	0.016	0.840	443	388	0.028	0.936	-0.014
Math SY1	1558	1355	-0.073	0.896	1463	1276	-0.341	0.860	0.305
Math SY2	809	696	-0.087	0.994	648	580	-0.284	0.873	-0.394
Reading PY1 (mentored vs. no mentored teacher)	272	251	0.238	0.868	262	238	0.216	0.894	0.025
Math SY1 (Caucasian students)	806	710	0.137	0.882	699	613	-0.121	0.836	0.299
Math SY1 (Hispanic students)	180	149	-0.249	0.845	133	114	-0.529	0.797	0.339

Baseline measures[1]	UGO group				BAU group				Effect size[3]
	Sample sizes		Sample characteristics		Sample sizes		Sample characteristics		
	Number of students randomly assigned	Number of students in analytic sample	Un-adjusted Mean	S.D.[2]	Number of students randomly assigned	Number of students in analytic sample	Un-adjusted Mean	S.D.	
Math SY1 (Alaska Native students)	157	138	-0.365	0.907	165	146	-0.615	0.825	0.287
Math SY1 (American Indian students)	12	10	-0.137	0.778	15	13	-0.534	0.807	0.481
Math SY1 (students of two or more races)	115	100	-0.112	0.876	139	117	-0.372	0.888	0.294

[1] P, primary; S, secondary, Y1, spring - first year of teaching; Y2 spring - second year of teaching.
[2] Student level standard deviations calculated from unadjusted z scores of the impact estimate sample.
[3] Hedges G.
[4] Confirmatory contrasts are included in shaded rows.

Sample sizes at the cluster and individual levels may be found for all contrasts in the contrast table (Appendix D).

Most student groups with UGO-mentored ECTs scored higher on the state assessment than student groups with BAU teachers. (The exceptions are primary reading students at the end of their ECT's second year of teaching and primary writing students at the end of their ECT's first year of teaching.) All but one impact estimate was positive (the exception being students of first-year secondary math UGO ECTs), but no differences were statistically significant. Table 19 shows the statistics for the impact analysis samples.

Students of both first- and second-year UGO ECTs improved their performance on the state mathematics assessment. The effect size of the difference between the scores of students with UGO-mentored teachers and students of BAU teachers for first-year secondary mathematics ECTs (0.25) suggests substantively important but not statistically significant differences, based on guidelines established by the WWC (U.S. Department of Education, 2014).

Table 19. Post-intervention outcomes for the analytic sample and estimated effects on student achievement

Outcome measures[1]	Intervention group		Comparison group		Estimated effects		
	Mean	Standard deviation[2]	Mean	Standard deviation	Impact estimate (standard error)	p-value	Effect size[3]
Reading PY1	0.143	0.966	0.077	0.962	0.042 (0.042)	0.324	0.069
Reading PY2[4]	0.054	0.901	0.093	0.877	0.035 (0.049)	0.469	-0.044
Writing PY1	0.018	0.988	0.053	0.945	0.002 (0.053)	0.970	-0.035
Writing PY2	0.150	0.894	0.074	0.868	0.055 (0.065)	0.393	0.086
Math PY1	0.125	0.939	0.015	0.920	0.018 (0.054)	0.741	0.119
Math PY2	0.100	0.835	0.037	0.922	0.053 (0.083)	0.528	0.072
Math SY1	-0.093	0.920	-0.314	0.867	-0.019 (0.042)	0.642	0.247
Math SY2	-0.133	0.936	-0.294	0.910	0.005 (0.091)	0.954	0.174
Reading PY1 (mentored vs. no mentored teacher)	0.279	0.952	0.113	0.931	0.147 (0.063)	0.019	0.176
Math SY1 (Caucasian students)	0.129	0.932	-0.134	0.862	0.254 (0.096)	0.008	0.292
Math SY1 (Hispanic students)	-0.365	0.792	-0.573	0.764	0.224 (0.108)	0.037	0.265
Math SY1 (American Indian students)	-0.170	0.668	-0.782	1.034	0.450 (0.231)	0.052	0.659
Math SY1 (Alaska Native students)	-0.300	0.890	-0.547	0.833	0.236 (0.107)	0.028	0.286
Math SY1 (Students of two or more races)	-.136	0.817	-0.381	0.875	0.243 (0.110)	0.028	0.288

[1] P, primary; S, secondary, Y1, spring - first year of teaching; Y2 spring - second yer of teaching.
[2] Student level standard deviations calculated from sample shown in previous table (unit of analysis) and z-scored prior to analysis.
[3] Hedges G
[4] Confirmatory contrasts are included in shaded rows.

In exploratory analyses, we found positive effects on a diverse set of students in mathematics achievement after their teachers had one year of UGO mentoring. As shown in Tables 18 and 19, we conducted exploratory analyses to estimate the impact of UGO mentoring on students of varied races/ethnicities. The secondary white (Caucasian), Hispanic, Alaska Native, and students of two or more races (not Hispanic) of first-year ECTs obtained significantly higher scores on the state math assessment than students with BAU teachers (p values ranged from 0.008 to 0.037). American Indian students with first-year UGO-mentored ECTs also achieved higher scores on the state mathematics assessment than American Indian students with BAU teachers ($p = 0.052$).

In another exploratory analysis, we found primary students' reading achievement was positively impacted by first-year UGO ECTs as compared with BAU ECTs who had no formal district mentor. We conducted an exploratory analysis to determine whether UGO mentoring had any impact on the students of UGO ECTs in districts that did not have formal mentoring programs (i.e., Fairbanks, Mat-Su, and Sitka). The primary students of first-year ECTs obtained significantly higher scores on the state reading assessment than students of BAU teachers ($p = 0.019$) with an effect size of 0.176.

Impact Study Summary

Teacher retention in the third year of teaching in Alaska was higher for the UGO ECTs than the BAU group. However, differences were not statistically significant. The effect size of 0.274 for Cohort 1 ECTs retained in their fourth year of teaching suggests positive effects on UGO ECTs that may be substantively important.

There was no statistically significant effect of ECTs' participation in UGO compared with ECTs' participation in BAU on teacher instructional practice as measured on the three domains of the CLASS—emotional support, classroom organization, and instructional support. CLASS scores were higher for the BAU ECTs compared to UGO ECTs, but not significantly so.

There was no statistically significant effect of ECTs' participation in UGO compared with ECTs' participation in BAU on primary students' academic achievement in reading, writing, or math and secondary students' academic achievement in math. State assessment scores were higher for the primary students of UGO ECTs in reading and math and for secondary students in math compared to BAU ECTs. State assessment scores were higher for the primary students of BAU ECTs in writing compared to UGO ECTs. However, these differences were not statistically significant.

We found positive effects on a diverse set of students in mathematics achievement after their teachers had one year of UGO mentoring. The secondary (grades 7–10) white (Caucasian) students, Hispanic students, Alaska Native students, and students of two or more races (not Hispanic) of first-year UGO ECTs obtained significantly higher scores on the state mathematics assessment than students with BAU teachers. These differences were statistically significant (p

values ranged from 0.008 to 0.037). American Indian students of first-year UGO ECTs also achieved higher scores on the state mathematics assessment than American Indian students with BAU teachers (p=0.052).

Primary students' reading achievement was positively impacted by first-year UGO ECTs as compared with BAU ECTs who had no formal district mentor. The primary (grades 3–6) students of first-year UGO ECTs obtained statistically significantly higher scores on the state reading assessment than students of BAU ECTs without a formal mentor (p = 0.019).

Chapter 6. Summary

Implementation Study Findings

Using the logic model as a basis for measuring implementation fidelity, we created a fidelity of implementation (FOI) matrix. The FOI matrix includes stated expectations from UAF (indicators) for implementation of UGO's four key components: mentor recruitment and assignment, mentor participation in professional development, mentor interactions with their ECTs, and mentor use of formative assessment tools. In addition to the key components and indicators, the matrix also identifies three levels of implementation: *low*, *adequate*, and *ideal*.

Results of the implementation study indicate that in most areas the UGO implementation of the ASMP model was at the *ideal* level, and evidence from the full spectrum of data sources indicates that ASMP successfully implemented UGO across all three years of systematically measured fidelity of implementation. The logic model accurately reflected implementation with effective program adaptations to an urban setting.

For indicators with *less than ideal* fidelity, several situations may have contributed to this, including challenges related to estimating the number of new teachers to be hired each year, which influenced how many mentors would be needed; differences among mentors in recording activities (e.g., coaching and use of formative assessment tools); and differences in the availability of ECTs in urban versus typical ASMP (rural) settings, which may have influenced the amount of time mentors spent with their ECTs.

The initial teaching experiences of UGO and BAU ECTs was substantially different in terms of the activities they engaged in at their school or district and their mentoring. As compared with BAU ECTs, these differences may have contributed to UGO ECTs spending more time with their mentor, being more trusting of their mentor, and engaging in work with their mentor that impacted their instructional practice.

The survey analysis revealed significant differences between the UGO and BAU mentoring interventions. UGO and BAU ECTs thought about their mentor's roles differently. UGO ECTs were more likely than BAU ECTs to think of their mentor as an expert guide, role model, advocate, and therapist/counselor. Whereas larger proportions of BAU than UGO ECTs considered their mentor a colleague, which is reasonable considering they also reported that their mentors were typically colleagues in their school. UGO ECTs met with their mentors less frequently but for longer periods than BAU ECTs. Possibly, to make up for less frequent face-to-face meetings, and compared to BAU ECTs, UGO ECTs had more frequent distance communication (e.g., telephone, email, text) with their mentors—75 percent of UGO ECTs communicated via these means daily or weekly versus 49 percent of BAU ECTs who did so. BAU ECTs were more likely to be mentored informally face-to-face.

Several factors facilitated implementation including focus on relationship building and ongoing communication and collaboration with project leaders, coordinators, mentors, and ECTs; high quality mentor professional development with required attendance, and training that effectively prepared mentors to work with ECTs. UGO mentors were respected as professionals, empowered to use their professional judgment and able to exercise flexibility and mentors found the ASMP documentation and formative assessment tools valuable.

Some conditions challenged implementation including a variety of logistical issues related to identifying and working with ECTs (e.g., estimating the number of mentors needed each year, balancing caseloads and travel, and organizational policies on hiring/contracting); the need for differentiated training and coaching to provide engaging content and professional development formats to mentors at different stages of mentoring and experience levels; and an initially rocky rollout of mentor tools online which inhibited use during the early rollout period. Mentors also had to balance relationship building with ECTs and their own mentoring style with tool use. Not all mentoring activities lent themselves to using tools and not all mentors were inclined to document every activity with their ECTs.

There was little variation in implementation across mentors. However, the UGO model varied from the ASMP model in some ways that stemmed from the fact that UGO was essentially a district initiative implemented in five districts, versus a state initiative implemented in many districts (that are often in rural, isolated villages or communities). This affected hiring and contracting, mentor access to support, and the amount of district-specific support ECTs received from their mentors.

There were some important differences between UGO and BAU conditions that distinguish the UGO from BAU groups, including:

- In the two districts with formal mentoring programs, ASMP was programmatically different. There were few similarities in ASMP's key components across the district-sponsored mentoring programs.
- BAU ECTs were more likely than UGO ECTs to receive or engage in some school or district support activities that commonly involved work with other colleagues.
- The mentoring experiences of UGO and BAU ECTs were different across numerous roles, interactions, and impacts.
- UGO ECTs met with their mentors less frequently but for longer periods than BAU ECTs. They reported slightly higher levels of trust in their mentor than did BAU ECTs. When they did meet with their mentors, they received support from them in a variety of areas significantly more frequently than BAU ECTs received from theirs.

Intervention Findings

The purpose of the intervention study was to examine the extent to which UGO mentors applied the mentoring model to their work with ECTs. In this study we distinguished implementation from intervention, with intervention defined as the interactions, activities and actions mentors engaged in with their ECTs. We examined intervention through a small exploratory study of UGO-mentored ECTs. The exploratory study drew on data from multiple sources to examine mentor-ECT dyad interactions among UGO ECTs who made strong gains in instructional practice, as measured by the Classroom Assessment Scoring System (CLASS), and those who did not. Using audio recordings of post-observation conversations, we used qualitative analyses techniques to examine differences in the mentoring intervention across mentor-ECT dyads.

The analysis of mentor-UGO ECTs' post-observation conversations revealed intriguing patterns in the intervention between ECTs who made the most gains on the CLASS (Gliders) and those who gained the least (Sliders). Mentor-ECT dyads with Glider ECTs engaged in significantly different ways from Slider dyads. ECTs in Glider dyads had longer conversations with their mentors, talked more about instruction and students, responded to each other more often, and engaged as peers more frequently than ECTs in Slider dyads.

Glider dyads were also qualitatively different from Slider dyads in the actions they took. Glider dyads more frequently focused on solving problems of practice, targeting successes and strengths of the ECT, and mentors in Glider dyads more often redirected conversations to the positive, especially with regard to students. Glider dyad conversations picked up on challenges and addressed them, mentors directly facilitated conversations when needed.

Impact Findings

The purpose of this research was to estimate the impact of ECT participation in UGO. Specifically, we estimated the impact of the ECTs' participation in UGO on teacher retention in the teaching profession in Alaska, instructional practice, and the academic achievement of ECTs' students in reading, writing, and mathematics. While no statistically significant differences were found on the confirmatory contrasts (at the level of $p = 0.05$), the following findings emerged, with some promising effects:

- Retention of UGO ECTs in their third year of teaching was higher than BAU ECTs (80.5% compared to 76.6%). While this finding indicates the treatment group had a higher retention rate than the control group, it represents a non-statistically significant difference with an effect size of 0.16.
- Average gains on CLASS domains of emotional support, classroom organization, and instructional support were higher for BAU ECTs compared to UGO ECTs. This is the reverse of what we would hypothesize. Differences were not statistically significant, effect sizes ranged from -0.32 to -0.14.

- State assessment scores were higher for the primary students of Year 1 UGO ECTs in reading and mathematics compared to BAU ECTs. In writing, scores were higher for the primary students of Year 1 BAU ECTs than UGO ECTs. In Year 2 primary students of UGO ECTs attained higher scores in writing and mathematics. Students of BAU ECTs scored better in Year 2 in reading. No differences were statistically significant.
- State assessment scores were higher for the secondary students of UGO ECTs in mathematics compared to students of BAU ECTs. While the differences were not statistically significant, after their first year of teaching, the effect size of 0.25 suggests substantively important differences.

Exploratory analyses examined the effect of mentoring on the students of UGO ECTs by race/ethnicity. The secondary students of first year UGO ECTs who were identified as white (Caucasian) students, Hispanic students, Alaska Native students or students of two or more races (not Hispanic) obtained significantly higher scores on the state mathematics assessment than students with BAU teachers (p values ranged from 0.008 to 0.037). American Indian students with first-year UGO-mentored ECTs also achieved higher scores on the state mathematics assessment than American Indian students with BAU teachers ($p = 0.052$).

An additional exploratory analyses compared the students of ECTs who had UGO mentors with those in districts with no formal mentoring programs (three of the five districts). The primary students of first-year UGO ECTs obtained statistically significantly higher scores on the state reading assessment than students of BAU teachers ($p = 0.019$).

Chapter 7. Considerations/Implications

Few studies of teacher mentoring have used research designs that employ treatment and control groups (Allen, 2005; Kraft et al., 2017). In our impact study we adhered to standards for rigorous educational research, using guidance from NE i3 and WWC to conduct a study using a randomized controlled trial. To provide context for interpreting the statistical results, we included studies not usually accompanying a rigorous study of impacts: a comprehensive study of implementation and a close look at the interactions between program mentors and ECTs through the intervention study. Together these three studies enabled in-depth analyses of the UGO mentoring program.

Overall, UGO was implemented with fidelity, although there is room to strengthen the intervention by focusing on educative mentoring in which mentor-ECT dyads collaboratively build on successes and address instructional practice. UGO teachers were retained in teaching at higher rates than BAU, although not at statistically significant levels. Analyses of student achievement suggest students of UGO-mentored ECTs generally had higher achievement scores, and the program had statistically significant and educationally important impacts on diverse secondary students in mathematics and primary grade students in reading. However, we found no statistically significant effects of UGO mentoring on instructional practice. The following sections are offered as considerations for UAF, as well as other mentoring programs, based on our research findings.

Considerations for Mentoring Programs

Some areas of the UGO program merit consideration as UAF continues to evolve and improve the ASMP model. One area is related to mentoring program expectations. In the ASMP rural model mentors visit ECTs monthly for at least 3.5 hours, which converted into an equivalent amount of time for face-to-face interaction under UGO. We found that some mentors struggled to consistently meet with all ECTs for this amount of time each month. Dedicated time with mentors and ECTs is essential for mentors to establish relationships, gather data on ECTs' instruction, discuss results, and collaboratively identify next steps. Program leaders in urban settings should consider adapting the program to fit the busy schedules of urban teachers and to protect time for mentoring.

UGO mentors were inconsistent in their use formative assessment tools when working with ECTs and in their documentation of how they used those tools. Formative assessment tools provide data for mentors to use in their discussions with mentees and as an entry point for mentors and ECTs to collaboratively agree upon potential strategies to solve instructional problems. Discussing data gathered during observations and collaboratively developing next steps is contingent upon dedicated interaction time. These are vital strategies that UAF and other mentoring programs can promote to strengthen effective educative mentoring. As program leaders and coaches review mentors' CALs, they might track the extent to which

formative assessment tools are being used and keep tool-use in the forefront of mentors' minds to increase the consistency of their use.

Considerations for Mentoring Interactions with ECTs

Our study detected little evidence that UGO impacted teachers' instructional practices on domains of the CLASS. While ECTs in UGO districts reported that their mentors strongly influenced their instructional practice, BAU ECTs were rated stronger on classroom instruction as measured by the CLASS. These unexpected results may be due to inconsistency in the UGO intervention across mentors. Limited evidence from the intervention study suggests that some mentors may have engaged in social support of their teachers at the expense of educative mentoring. It is possible that focusing more closely on instructional practice—and particularly on student success—could produce more positive outcomes and effects that could be measured on instruments such as the CLASS.

In light of our statistically nonsignificant estimates of the effects of mentoring on instructional practice, we looked to other lines of evidence for how mentors might shape classroom instruction. We found that ECTs whose instructional practice improved over the course of the study were in dyads in which mentors maintained an intentional and consistent focus on educative mentoring. Specifically mentors in these dyads:

- Problem solved with new ECTs
- Targeted successes and strengths of ECTs and their students
- Listened for ECTs' challenges and addressed them
- Redirected/facilitated conversations as needed
- Made time for mentor-ECT conversations
- Focused on instruction and students
- Ensured balanced air time in the conversation between mentors and ECTs
- Allowed for differing opinions

These practices echo other research on effective educative mentoring (Feiman-Nemser, 2001; Kraft et al., 2017; Lofthouse et al., 2010) and are directly applicable to mentors' practice. Results of the intervention study suggest that ECTs' classroom practice improves when mentors are more intentional in their coaching, following a cycle of planning for an observation, observing instruction and gathering data, interpreting results in collaboration with ECTs, co-developing next steps, and communicating between visits.

Implications for Mentoring Programs to Bolster Impacts

While we found that UGO was implemented with adequate fidelity, it might be that *ideal* fidelity is necessary to see the types of impacts the program suggests and mentoring programs seek. Coaching mentors is an area that emerged with implications for strengthening the entire

program and for ensuring that implementation is tightly focused on the model and on educative mentoring. Mentor communication with coaches was scored at an *adequate* level in Year 1 and Year 3 for most mentors, while most were at the *ideal* level in Year 2. Coaching challenges were reiterated during interviews. Coaches can play a critical role in supporting the mentors strive to improve their own practice and authentically engage with ECTs. However, more emphasis on coaches as instructional partners would require a shift in their current role, toward a more instructive relationship. It would also mean increased support for coaches from program leaders. One consideration is that during the UGO study, there were several changes in program leadership that may have influenced the work mentors did with ECTs and the role of coaches. A program such as UGO needs strong leadership to conceptually anchor the intervention and inspire mentors.

Teacher retention was an area in which UGO ECTs experienced higher rates than BAU ECTs. Under the UGO model, the important connections between mentors and site administrators played a lesser role than in the ASMP model. Other research suggests that multiple supports are important for ECTs, and it is possible that the added support of principals through working relationships with mentors could boost retention further. Finding ways for mentors to engage meaningfully with site administrators, and possibly other teachers, might be a consideration to better situate mentoring in a teacher induction model and as a whole-school effort to improve teacher retention rates. Site administrators (principals) can support these efforts by protecting ECTs' time for collaborating with mentors.

The retention of several more teachers in Alaska each year likely has a positive effect economically, as it saves districts from hiring and training new teachers. It also provides stability to the teaching force in the state, facilitating long-term initiatives and professional learning. By using mentoring as part of a comprehensive induction package for new teachers, with support from principals, peers, and protected time for planning/mentoring, the impact could move beyond the effect size of 0.16 and show statistical significance. One consideration is that this study took place during a severe economic crisis in Alaska, which will likely continue into the coming school year. Current estimates are that for the 2017-18 school year the state will lose "about 123 'full-time equivalent' positions, including 99 teachers, to save about $7.2 million total" (Hanlon, 2017, para. 3). In this economic climate, districts were forced to reduce teaching positions and cut back on other benefits, which may have influenced retention rates among both the UGO and BAU groups.

Students of UGO ECTS attained higher scores on state assessments than students of BAU ECTs in several areas. As noted earlier, the trend toward higher scores for some students of UGO-mentored ECTs suggests that with a stronger intervention, results could be more pronounced. Our confirmatory and exploratory analyses, suggest some important findings related to student achievement. The differences in students' secondary mathematics scores, after UGO ECTs' first year of teaching, with the effect size of 0.25, suggests educational importance if not statistical significance. This, coupled with the statistically significant differences in outcomes for diverse secondary students in mathematics indicates UGO-mentored secondary mathematics ECTs

learned effective strategies for teaching mathematics to a diverse set of students. This is an important finding because algebra and secondary mathematics are essential for college success, particularly in the sciences, and improving mathematics outcomes for racial and ethnic minority students could increase their chances of entering and succeeding in postsecondary institutions. These results were attained without intentional matching of mentors to ECTs by teaching experience. UAF and other programs might consider the potential impact of assigning mentors to ECTs by content experience.

Statistically significant effects for primary grade students of UGO ECTs in reading—as compared to BAU ECTs in districts that did not have formal, district-supported mentoring programs—suggest the impact UGO mentoring can have. UGO mentoring can help boost the reading achievement of primary grade students, which is crucial for their academic success. Ensuring that every child is a reader has been the goal of instruction, educational research, and reform efforts for decades. This is an important finding with implications for the value of supporting new teachers through mentoring. It shows that mentors have a significant lever for improving ECT practice and ultimately impacting student achievement in reading.

A final consideration is that both statistically significant exploratory findings came after ECTs' first year of teaching. This prompts questions about both how to further strengthen mentoring in the first year and how to deepen it in the second year. How could effects seen among students of first-year teachers be extended to more students? Is it possible that second-year mentor training could be modified to continue to "push" teachers' practice as they gain experience? Might such training produce a measureable impact? These questions warrant discussion of mentor training in ECTs' second year and how best to support the mentors of ECTs as they grow in their practice.

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Appendix A. ECT Survey Data Tables—Combined Responses from Year 1 and Year 2 Treatment (UGO) and Control (BAU) ECTs

Throughout this document, an asterisk ("*") indicates a statistically significant difference ($p \leq 0.05$).

Table A-1. Training, professional development, and other support ECTs received

What types of training, professional development, and/or support have you received this year (select all that apply)?	Percentage responding "Yes" (n)	
	BAU	UGO
New teacher orientation†	44.3% (155)	43.6% (159)
District/school culture orientation†	21.7% (76)	17.3% (63)
District/school curriculum training†	61.9% (273)	57.3% (262)
District/school professional development	87.5% (448)	74.5% (400)*
Release time to participate in professional development	50.2% (257)	41.7% (224)*
Release time to observe other teachers	42.6% (218)	25.1% (135)*
Support form district/school content coaches	39.5% (202)	29.1% (156)*
Support from liaison from teaching program	4.3% (22)	5.4% (29)
Common grade-level planning time	55.1% (282)	41.3% (222)*
Common subject-level planning time	27.2% (139)	24.8% (133)
Collaboration time with other new teachers	29.5% (151)	25.0% (134)

†Cohort 1 treatment ECTs were not asked this in year 1; results exclude cohort 1, year 1 treatment and control ECTs.

Table A-2. Sources of support the ECT received most to improve effectiveness in the classroom

From what source do you receive the most support to improve your effectiveness in the classroom?	Percentage responding "Yes" (n)	
	BAU	UGO
A mentor*	25.9% (132)	50.8% (273)
District professional development*	4.9% (25)	1.3% (7)
Mandated collaboration with colleagues*	4.9% (25)	1.5% (8)
Informal collaboration with colleagues*	45.7% (233)	33.5% (180)
Site administrator or principal*	7.7% (39)	2.6% (14)
Former host teacher*	2.9% (15)	3.0% (16)*

Table A-3. Number of times a site administrator/principal visited an ECT classroom for at least 5 to 10 minutes to observe instructional activities

How many times has your site administrator/principal been in your classroom for at least 5–10 minutes to observe instructional activities this year?	Mean (S.D.). (n)	
	BAU	UGO
	5.6 (5.28) (480)	6.6 (5.82)* (504)

Table A-4. Frequency of time spent with other ECTs in the ECT's school and district

How much time do you spend with other early career teachers in your school? In your district?	Percentage (n)			
	None	Very little	Some	A lot
School				
BAU	15.1% (72)	33.3% (159)	33.3% (159)	18.4% (88)
UGO	23.1% (115)	32.6% (162)	29.2% (145)	15.1% (75)*
District				
BAU	33.9% (171)	43.9% (221)	19.4% (98)	2.8% (14)
UGO	33.5% (179)	46.5% (249)	15.7% (84)	4.3% (23)

Table A-5. ECTs' agreement on instructional context

To what extent do you agree with the following statements?		Strongly disagree	Disagree	Agree	Strongly agree
My colleagues contribute to my professional growth.	BAU	0.6% (3)	3.3% (17)	47.1% (241)	49.0% (251)
	UGO	0.9% (5)	2.6% (14)	51.6% (277)	44.9% (241)
My site administrator/principal supports my professional growth.	BAU	2.0% (10	2.7% (14)	51.5% (263)	43.8% (224)
	UGO	2.2% (10)	5.2% (28)	53.5% (287)	39.1% (210)
I accept and feel comfortable with the culture of the community in which I teach.	BAU	0.8% (4)	3.3% (17)	47.8% (244)	48.1% (246)
	UGO	0.9% (5)	3.7% (20)	51.6% (277)	43.8% (235)
I accept and feel comfortable with the climate of the school in which I teach.	BAU	0.8% (4)	7.1% (36)	47.6% (242)	44.5% (226)
	UGO	1.3% (7)	7.3% (39)	51.3% (274)	40.1% (214)
Connecting my teaching to the student's cultural background is essential to student learning.	BAU	0.7% (3)	2.7% 12)	44.9% (198)	51.7% (228)
	UGO	0.4% (2)	1.5% (7)	46.0% (210)	52.1% (238)

Table A-6. Supports that enhanced ECTs' ability to teach students

Which of the following supports have enhanced your ability to teach students this year (select all that apply)? Please rank the top three supports.	Percentage (n)			
	Percentage responding "Yes" (n)		Ranked in the top three	
Support	BAU	UGO	BAU ranked	UGO ranked
Formal mentor	49.0% (251)	94.0% (505)*	77.3% (194)	74.7% (377)
Informal mentor	41.2% (211)	33.3% (179)*	66.4% (140)	58.1% (104)
District-level support	19.5% (100)	17.3% (93)	27.0% (27)	14.0% (13)*
Common planning time with other teachers	50.0% (256)	43.4% (233)*	53.1% (136)	35.6% (83)*
Grade-level collaborations	49.4% (253)	48.6% (261)	57.7% (146)	44.8% (117)*
Administrator support	55.9% (286)	48.2% (259)*	54.6% (156)	38.6% (100)*
Aide(s) paraprofessional(s)	34.4% (176)	34.3% (184)	56.8% (100)	46.7% (86)
Support from students' parents	36.7% (188)	33.2% (178)	22.9% (43)	18.0% (32)
Sufficient salary	30.3% (155)	26.6% (143)	18.1% (28)	15.4% (22)
Sufficient resources and materials	44.9% (230	45.6% (245)	40.0% (92)	24.9% (61)*
Informal collaborations	57.6% (295)	60.2% (323)	53.9% (159)	34.4% (111)*
University programs	13.1% (67)	15.8% (85)	35.8% (24)	18.8% (16)*
Professional development/workshops/ conferences/training	57.2% (293)	60.9% (327)	48.8% (143)	39.5% (129)*
Extra resources (volunteers)	23.1% (118)	19.2% (103)	22.9% (27)	8.7% (9)*

Note: Question varied per survey administration; in 2015 and 2016, question reads: "Describe any mentor support you had this year (select all that apply)?"

Table A-7. Challenges that hindered ECTs' ability to teach students

Which of the following challenges have hindered your ability to teach students this year (select all that apply)? Please rank the top three.	Percentage (n)			
	Percentage responding "Yes" (n)		Ranked in the top three	
Challenge	BAU	UGO	BAU	UGO
Time management	29.1% (149)	29.6% (159)	47.7% (71)	41.5% (66)
Time constraints or school schedules	41.4% (212)	45.3% (243)	67.0% (142)	58.4% (142)
Classroom management	29.5% (151)	30.0% (161)	67.6% (102)	48.5% (78)*
Lack of administrative support	9.2% (47)	14.2% (76)*	63.8% (30)	59.2% (45)
Inexperience with culture	3.9% (20)	4.8% (26)	35.0% (7)	19.2% (5)
Conflict in personality with mentor	0.6% (3)	0.6% (3)	66.7% (2)	33.3% (1)
Being assigned a mentor with no choice	0.8% (4)	1.5% (8)	75.0% (3)	37.5% (3)
Not having a mentor	10.4% (53)	0.4% (1)*	0.0% (0)	0.0% (0)
Relationship with parents	8.0% (41)	12.3% (66)*	43.9% (18)	39.4% (26)
Isolation	12.3% (63)	8.9% (48)	49.2% (31)	43.8% (21)
Low student motivation	39.3% (201)	39.7% (213)	77.6% (156)	61.5% (131)*
Student attendance	40.8% (209)	39.7% (213)	65.1% (136)	51.6% (110)*
Student personal issues	38.5% (197)	35.8% (192)	58.4% (115)	54.2% (104)
Stress	40.0% (205)	38.2% (205)	60.5% (124)	47.3% (97)*
Phases/level system	1.8% (9)	0.7% (4)	44.4% (4)	25.0% (1)
Curriculum	16.0% (82)	19.7% (106)	53.7% (44)	43.4% (46)
Inadequate teacher preparation	5.7% (29)	8.0% (43)	34.5% (10)	39.5% (17)
Wide range of grades/levels	19.5% (100)	23.9% (128)	56.0% (56)	51.6% (66)
Insufficient salary	6.8% (35)	6.7% (36)	42.9% (15)	50.0% (18)
Differentiating instruction for diverse learners	34.8% (178)	31.1% (167)	53.4% (95)	44.9% (75)
Grade-level collaborations	2.7% (14)	5.6% (30)*	50.0% (7)	26.7% (8)
Lack of resources (people or objects)	23.1% (118)	20.9% (112)	58.5% (69)	54.5% (61)
School culture	9.0% (46)	10.8% (58)	39.1% (18)	46.6% (27)

Table A-8. ECTs who reported having a mentor (formal or informal)

Did you have a formal/informal mentor?	Percentage reporting "Yes" (n)
BAU	70.1% (359)
UGO	98.7% (530)*

Table A-9. Start dates for mentoring

When did you begin working with your mentor?	Percentage (n)	
	August/September	After September
BAU	80.5% (285)	19.5% (69)
UGO	95.8% (429)	4.2% (19)*

Table A-10. ECT success attributed to mentor

Of the success you've had as an early career teacher, what proportion would you attribute to help from your mentor?	Percentage (n)		
	Not at all/ hardly at all	Some	Quite a bit/a great deal
BAU	8.4% (30)	37.3% (134)	54.3% (195)
UGO	4.2% (22)	30.1% (159)	65.8% (348)*

Table A-11. Perceived mentor responsibility for formal evaluation of ECTs

Does your mentor have any responsibility for formally evaluating you (e.g., feedback to your principal)?	Percentage (n)		
	I don't know	No	Yes
BAU	18.1% (65)	79.1% (284)	2.8% (10)
UGO	17.8% (80)	76.8% (345)	5.4% (24)

Table A-12. ECT-mentor supports provided by school/district

What supports has your district/school provided you to work with your mentor (select all that apply)?	Percentage responding "Yes" (n)	
	BAU	UGO
I have access to a substitute.	46.5% (167)	9.8% (52)*
My mentor has access to a substitute.	34.0% (122)	0.4% (1)*
We share a common planning time.	9.5% (34)	23.1% (59)*
We share a common teaching assignment (grade or subject).	29.5% (106)	4.3% (11)*
We are within close proximity to each other.	31.8% (114)	5.1% (13)*
I am released from non-instructional duties (bus, playground, etc.).	0.6% (2)	7.4% (39)*
My mentor is released from non-instructional duties.	2.0% (7)	3.5% (9)*

Table A-13. Similarity of ECTs' and mentors' teaching experience

My mentor and I have the same experience teaching in the following situations (select all that apply).	Percentage responding "Yes" (n)	
	BAU	UGO
Same grade	62.1% (223)	32.3% (171)*
Same school level	41.8% (150)	26.2% (139)*
Same subject(s)	51.5% (185)	35.3% (187)*
Similar student populations, such as SPED or ELL	47.9% (172)	34.0% (180)*
Same district	81.3% (292)	77.4% (410)
Same school	33.7% (121)	8.1% (43)*

Table A-14. Issues addressed by mentors

My mentor addresses the following issues with me (select all that apply).	Percentage responding "Yes" (n)	
	BAU	UGO
Pedagogy	54.9% (197)	76.0% (403)*
Classroom management	88.3% (317)	93.8% (497)*
Content matter	66.3% (238)	69.4% (368)
Curriculum materials	76.0% (273)	77.7% (412)
School-specific logistics/procedures	52.1% (187)	47.7% (253)
District-specific logistics/procedures	56.0% (201)	64.2% (340)*

Table A-15. ECTs' characterizations of their mentors

I would characterize my mentor as a/an….(select all that apply)	Percentage responding "Yes" (n)	
	BAU	UGO
Colleague	82.2% (295)*	68.7% (364)
Role model	66.0% (237)	72.1% (382)*
Evaluator	12.5% (45)	31.5% (167)*
Therapist/counselor	19.8% (71)	34.5% (183)*
Friend	58.5% (210)	62.1% (329)
Expert guide	55.2% (198)	72.8% (386)*
Advocate	49.9% (179)	65.5% (347)*
Critic	8.6% (31)	13.4% (71)*

Table A-16. ECTs' preferred methods of communication with mentor

My preferred method(s) of communication with my mentor is … (select all that apply)	Percentage responding "Yes" (n)	
	BAU	UGO
Face-to-face	91.1% (327)	87.9% (466)
Telephone/skype audio	16.2% (58)	10.6% (56)*
Email	58.5% (210)	72.1% (382)*
Chat/text	26.5% (95)	20.6% (109)*
Skype video/video conferencing	3.6% (13)	1.5% (8)*

Table A-17. Predominate nature of ECTs' communications with mentor

Our [mentor and ECT] communications are mostly …	Percentage (n)		
	Formal	Informal	Both
BAU	27.7% (99)	25.4% (91)	46.9% (168)
UGO	42.8% (227)	3.2% (17)	54.0% (286)*

Table A-18. ECTs' preferred communication Time

My mentor and I usually meet together … (select all that apply)	Percentage responding "Yes" (n)	
	BAU	UGO
Before school	19.8% (71)	11.9% (63)*
During class time	13.9% (50)	54.0% (286)*
During planning time	25.6% (92)	79.3% (420)*
During lunch	16.7% (60)	52.6% (279)*
After school	76.0% (273)	54.9% (291)*
On non-school days	18.4% (66)	6.8% (36)*

Table A-19. Convenience of ECTs' regular meeting time with mentor

The meeting times my mentor and I have are …	Percentage (n)				
	Very inconvenient	Inconvenient	Sometimes convenient	Convenient	Very convenient
BAU	0.3% (1)	0.6% (2)	19.6% (70)	48.7% (174)	30.8% (110)
UGO	0.8% (4)	0.2% (1)	16.2% (85)	43.8% (230)	39.1% (205)

*Table A-20. Frequency of ECTs' face-to-face contact with mentor**

My mentor and I are in contact face-to-face …	Percentage (n)					
	Daily	Weekly	Every two weeks	Monthly	Occasionally	Never
BAU	15.9% (57)	15.6% (56)	34.3% (123)	25.1% (90)	8.9% (32)	0.3% (1)
UGO	0.0% (0)	9.1% (48)	45.3% (240)	44.2% (234)	1.5% (8)	0.0% (0)*

*Table A-21. Length of time for face-to-face meetings**

On average, these sessions last …	Percentage (n)					
	15 minutes or less	About 30 minutes	About 1 hour	About 2 hours	About 3 hours	More than 3 hours
BAU	24.0% (86)	21.8% (78)	39.4% (141)	12.6% (45)	0.8% (3)	1.4% (5)
UGO	0.6% (3)	19.1% (101)	34.0% (180)	24.3% (129)	14.2% (75)	7.9% (42)*

Table A-22. Influence of face-to-face meetings on ECTs' teaching practice

This face-to-face contact influences my teaching practice …	Percentage (n)		
	Not at all/ hardly at all	Some	Quite a bit/ a great deal
BAU	3.4% (12)	35.2% (123)	61.3% (214)
UGO	2.5% (13)	25.0% (130)	72.6% (378)*

*Table A-23. Frequency of contact with ECTs through distance methods**

My mentor and I are in contact through distance methods …*	Percentage (n)					
	Daily	Weekly	Every two weeks	Monthly	Occasionally	Never
BAU	5.6% (19)	43.8% (148)	22.8% (77)	11.0% (37)	16.9% (57)	0.0% (0)
UGO	0.8% (4)	74.3% (394)	19.4% (103)	3.8% (20)	1.7% (9)	0.0% (0)*

*Such as email, phone, Skype, instant messaging.

Table A-24. Influence of distance meetings on ECTs' teaching practice

The distance contact influences my teaching practice …	Percentage (n)		
	Not at all/ hardly at all	Some	Quite a bit/ a great deal
BAU	17.7% (53)	47.0% (141)	35.3% (106)
UGO	10.0% (13)	47.4% (237)	42.6% (213)*

Table A-25. Frequency and extent of influence of mentor/mentee activities

The following are activities your mentor could do when visiting with you. For each activity, indicate how often it occurs and to what extent it influences your teaching practice.		**Percentage (n)**					
		Frequency			**Influence on teaching practice**		
Activities		Never/ occasionally	Monthly	Every two weeks/ weekly	Not at all/ hardly at all	Some	Quite a bit/ a great deal
Observe your instruction	BAU	89.1% (317)	7.9% (28)	3.1% (11)	8.7% (14)	44.7% (72)	46.6% (75)
	UGO	11.4% (60)	52.3% (276)	36.4% (192)*	3.3% (17)	26.2% (135)	70.5% (363)*
Gather classroom data	BAU	84.2% (298)	10.5% (37)	5.4% (17)	10.4% (15)	50.0% (72)	39.6% (57)
	UGO	24.4% (129)	44.4% (235)	31.2% (165)*	2.4% (12)	31.9% (159)	65.7% (327)*
Model lessons or strategies with your students and/or co-teach in your classroom	BAU	92.7% (330)	4.2% (14)	3.1% (11)	5.6% (6)	33.3% (36)	61.1% (66)
	UGO	79.7% (408)	12.1% (62)	8.2% (42)*	1.4% (4)	33.0% (93)	65.6% (185)
Provide you with resources and materials	BAU	44.3% (158)	19.6% (70)	36.1% (129)	3.6% (12)	33.6% (113)	62.8% (211)
	UGO	24.3% (129)	29.4% (156)	46.2% (145)*	2.4% (12)	28.4% (145)	69.3% (354)
Document your work together	BAU	43.1% (154)	19.3% (69)	37.5% (134)	19.5% (46)	41.1% (97)	39.4% (93)
	UGO	7.0% (37)	34.0% (180)	59.1% (313)*	6.4% (32)	35.5% (179)	58.1% (293)*
Engage with you in goal setting process (for example, use an individual learning plan, professional growth plan, professional development plan, etc.	BAU	56.9% (203)	20.7% (74)	22.4% (80)	4.5% (11)	39.6% (97)	55.9% (137)
	UGO	15.5% (82)	42.3% (224)	42.2% (223)*	3.1% (16)	26.6% (138)	70.3% (365)*
Brainstorm with you ways to approach a challenge with a student or class	BAU	30.1% (107)	18.5% (66)	51.4% (183)	2.4% (8)	25.0% (85)	72.7% (247)
	UGO	11.2% (59)	29.9% (158)	59.0% (312)*	1.3% (7)	13.6% (71)	85.1% (446)*

Table A-26. Frequency and extent of influence of mentor/mentee topic discussions

The following are topics you might discuss with your mentor. For each topic, indicate how often these conversations occur and to what extent they influence your teaching practice.		Percentage (n)					
		Frequency			Influence on teaching practice		
Topic		Never/ occasionally	Monthly	Every two weeks/ weekly	Not at all/ hardly at all	Some	Quite a bit/ a great deal
Observation of your instruction and/or data that were gathered	BAU	77.5% (276)	11.8% (42)	10.7% (38)	6.1% (12)	48.5% (95)	45.4% (89)
	UGO	11.1% (50)	46.3% (208)	42.5% (191)*	1.6% (7)	20.1% (88)	78.4% (344)*
Issues of equity (e.g., in environment or atmosphere; how students are engaged; curriculum, content, assessments)	BAU	46.5% (166)	21.6% (77)	39.1% (114)	3.8% (11)	43.9% (127)	52.3% (151)
	UGO	18.9% (100)	39.1% (207)	42.1% (223)*	3.2% (16)	29.6% (149)	67.3% (339)*
Cultural awareness, values, and sensitivity	BAU	67.2% (240)	14.3% (51)	18.5% (66)	7.9% (20)	53.6% (135)	38.5% (97)
	UGO	44.2% (234)	31.0% (164)	24.8% (148)*	6.5% (31)	46.4% (221)	47.1% (224)
Working with special populations (e.g., learning disabled, English language learners, gifted and talented, physically handicapped)	BAU	51.5% (184)	19.3% (69)	29.1% (104)	4.5% (13)	43.8% (126)	51.7% (149)
	UGO	38.5% (204)	28.9% (153)	32.6% (173)*	4.4% (21)	36.9% (178)	58.7% (283)
Lesson planning	BAU	54.1% (193)	20.5% (73)	25.5% (91)	7.6% (22)	44.3% (129)	48.1% (140)
	UGO	47.4% (249)	28.2% (148)	24.4% (128)*	7.0% (32)	40.0% (183)	53.1% (243)
Parent communication	BAU	63.9% (228)	18.8% (67)	17.4% (62)	4.7% (13)	52.0% (143)	43.3% (119)
	UGO	54.5% (289)	28.3% (150)	17.2% (91)*	7.6% (35)	46.7% (214)	45.6% (209)
Site administrator/principal communication	BAU	66.4% (237)	15.4% (55)	18.2% (65)	10.3% (26)	49.4% (125)	40.3% (102)
	UGO	57.1% (302)	25.7% (136)	17.2% (91)*	8.1% (35)	45.6% (197)	46.3% (77)

Table A-27. Mentors' responsiveness to ECT needs

Overall, how responsive has your mentor been to your needs this year?	Percentage (n)		
	Very unresponsive	Somewhat responsive	Very responsive
BAU	8.4% (30)	14.9% (53)	76.7% (273)
UGO	10.9% (58)	6.4% (34)	82.6% (438)*

Table A-28. ECTs' agreement on work with mentors

To what extent do you agree with the following statements?		Percentage agreement			
		Strongly disagree	Disagree	Agree	Strongly agree
My work with my mentor is guided by professional teaching standards.	BAU	0.9% (3)	3.4% (12)	38.7% (137)	57.1% (202)
	UGO	0.0% (0)	0.4% (2)	23.3% (123)	76.3% (402)*
My work with my mentor is driven mostly by relationship and not paperwork.	BAU	3.1% (9	9.4% (27)	47.0% (135)	40.4% (116)
	UGO	1.5% (8)	10.1% (53)	47.4% (249)	41.0% (215)
My mentor provides emotional support.	BAU	1.4% (5)	6.5% (23)	40.4% (143)	51.7% (183)*
	UGO	0.4% (2)	2.9% (15)	37.3% (196)	59.4% (312)
My mentor supports my understanding of the culture(s) in my community.	BAU	0.7% (2)	4.5% (14)	46.5% (144)	48.4% (150)
	UGO	0.0% (0)	2.3% (10)	41.4% (184)	56.3% (250)*
A formal definition of mentor-mentee roles would have been helpful.†	BAU	16.2% (32)	46.7% (92)	25.9% (51)	11.2% (22)
	UGO	12.6% (45)	43.6% (156)	32.4% (116)	11.5% (41)
My work with my mentor includes the content, performance, and/or cultural standards for Alaska's students.	BAU	1.5% (5)	11.3% (39)	46.4% (160)	40.9% (141)
	UGO	0.2% (1)	3.3% (17)	34.8% (180)	61.8% (320)*
Overall, having a mentor has been beneficial to my teaching.	BAU	0.6% (2)	2.8% (10)	30.1% (106)	66.5% (234)
	UGO	0.6% (3)	3.0% (16)	17.8% (94)	78.6% (415)*

† Question was not asked in 2016 survey administration.

Table A-29. ECTs' agreement on trust scale

The following are statements about your mentor. Please indicate the extent to which you agree or disagree with each statement…	Mean (S.D) (n) BAU	Mean (S.D) (n) UGO
Honesty	5.7 (0.59) (356)	5.8 (0.47)* (530)
I trust my mentor.	5.7 (0.72) (356)	5.8 (0.51)* (530)
I have faith in the integrity of my mentor.	5.7 (0.61) (356)	5.8 (0.67) (530)
My mentor keeps his or her word.	5.7 (0.59) (356)	5.8 (0.50)* (530)
When my mentor tells me something I can believe it.	5.6 (0.78) (356)	5.7 (0.70)* (530)
Benevolence	5.6 (0.64) (356)	5.8 (0.53)* (530)
My mentor typically looks out for me.	5.6 (0.85) (356)	5.8 (0.53)* (530)
My mentor typically acts with my best interest in mind.	5.7 (0.68) (356)	5.8 (0.51)* (530)
My mentor shows concern for me.	5.6 (0.77) (356)	5.8 (0.57)* (530)
My mentor is unresponsive to my concerns.†	5.6 (0.96) (356)	5.7 (0.97) (530)
Competence	5.7 (0.64) (356)	5.8 (0.57)* (530)
I am suspicious of most of my mentor's actions.†	5.8 (0.81) (356)	5.8 (0.84) (530)
My mentor is competent in doing his or her job.	5.7 (0.74) (356)	5.8 (0.55)* (530)
Reliability	5.6 (0.77) (356)	5.8 (0.56)* (530)
Even in difficult situations I can depend on my mentor.	5.5 (0.91) (356)	5.7 (0.67)* (530)
My mentor is reliable.	5.6 (0.73) 356	5.8 (0.55)* 530
Openness	5.2 (0.90) (356)	5.2 (0.76) (530)
My mentor is open.	5.7 (0.70) (356)	5.8 (0.51)* (530)
My mentor openly shares personal information with me.	4.8 (1.44) (356)	4.6 (1.36) (530)
TOTAL SCORE	5.6 (0.59) 356	5.7 (0.45)* 530

Note: Mean determined from a 6-point scale, with ratings from "1" indicating "strongly disagree" to "6" indicating "strongly agree."
†For reporting purposes, negatively worded items were reverse coded.

Appendix B. Fidelity of Implementation Findings by Indicator

The following tables detail findings for each of the 16 indicators included in the four key components of the Urban Growth Opportunity (UGO) Fidelity of Implementation (FOI) matrix. Table B-1 is only for the mentors who were new each year. All other tables are for the entire sample of mentors participating in the project. Each section begins with a narrative description of the indicators under each component and concludes with a summary of results for the component.

FOI Findings for Key Component 1, Mentor Recruitment and Assignment

The Alaska Department of Education and Early Development (AK DEED) recommends a minimum qualification for becoming an Alaska Statewide Mentor Project (ASMP) mentor of at least eight years of teaching experience in Alaska. We set this as our *adequate* bar. Mentors scored *low* if they had fewer than eight years of experience teaching in Alaska, and they scored *ideal* if they had more than eight years of such teaching experience. We only assessed this indicator the year the mentor was hired.

In the ASMP model, mentors are fully released from classroom responsibilities, allowing them to dedicate their full-time equivalent (FTE) to mentoring. We set this as our bar. Mentors scored *low* if their mentoring occurred in addition to teaching, as this would not afford them the opportunity to work with early career teachers (ECTs) during the ECTs' school day. We scored them *adequate* if their mentoring occurred in addition to other, non-teaching duties in the district. We reasoned that as some UGO mentors were district employees, districts might assign other duties to them that mentors could address around the schedules they established for interacting with their ECTs. We assessed this indicator every year.

AK DEED assigns a full-time mentor a caseload of no more than 15 ECTs to provide sufficient time for each mentor to spend with their assigned ECTs. We set this as our *ideal* bar. We scored full-time mentors *low* if they had more than 15 ECTs, because with too many ECTs they would be unable to spend sufficient time with each of them. We scored full-time mentors *adequate* if they had fewer than 12 ECTs. With too few ECTs, mentors could spend more than the model's recommended time with each ECT. We assessed this indicator every year.

The following four tables detail project findings for the three indicators included in the first key component of the UGO FOI matrix. Table B-1 summarizes fidelity indicators for the component. Tables B-1 through B-3 summarize each indicator across the three years in which fidelity was measured. Table B-4 summarizes results for the component.

Table B-1. UGO FOI matrix and findings for key component 1 mentor recruitment/assignment: Alaska teaching experience

Indicator 1.1: AK teaching experience **Operational definition:** 8 years **Assessed:** First-year mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 9)**	**Y3, 2014-15 (n = 2)**
0. Low: Less than 8 years of experience teaching in Alaska	0% (0)	11% (1)	0% (0)
1. Adequate: 8 years of experience teaching in Alaska	0% (0)	0% (0)	0% (0)
2. Ideal: More than 8 years of experience teaching in Alaska	100% (10)	89% (8)	100% (2)
Full-sample fidelity score (Percentage of mentors with fidelity score of 1 or 2)	100% (10)	89% (8)	100% (2)

Sources: Mentor profile.

Table B-2. UGO FOI matrix and findings for key component 1 mentor recruitment/assignment: mentoring time

Indicator 1.2: Mentoring time **Operational definition:** Full-release **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentoring occurs in addition to teaching	0% (0)	0% (0)	0% (0)
1. Adequate: Mentoring occurs in addition to other, non-teaching, duties in the district	0% (0)	0% (0)	12% (2)
2. Ideal: Mentoring occurs with no other responsibilities in district	100% (10)	100% (18)	88% (15)
Full-sample fidelity score (Percentage of mentors with fidelity score of 1 or 2)	100% (10)	100% (18)	100% (17)

Sources: Mentor profile; interviews.

Table B-3. UGO FOI matrix and findings for key component 1 mentor recruitment/assignment: caseload

Indicator 1.3: Caseload **Operational definition:** 1.0 FTE: 12–15 ECTs 0.5 FTE: 6–7 ECTs 0.375 FTE: 4–5 ECTs **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Has a caseload above 15 (if 1.0 FTE), above 8 (if 0.5 FTE), or above 5 (if 0.375 FTE)	0% (0)	0% (0)	12% (2)
1. Adequate: Has a caseload of less than 12 (if 1.0 FTE), less than 6 (if 0.5 FTE), or less than 4 (if 0.375 FTE)	50% (5)	6% (1)	6% (1)
2. Ideal: Has a caseload of 12-15 (if 1.0 FTE), 6-7 if (0.5 FTE), or 4-5 (if 0.375 FTE)	50% (5)	94% (17)	82% (14)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	100% (18)	88% (15)

Sources: Contact log by calendar week; ASMP dashboard; mentor interview.

Table B-4. Fidelity of key component: mentor recruitment/assignment

	Year 1	Year 2	Year 3
Average percent of mentors with a score of 1 or 2 across indicators	100%	96%	96%
Average of the three indicators is at least 70 percent of mentors scoring 1 or 2	Yes	Yes	Yes
At least 51 percent of mentors score 1 or 2	Yes	Yes	Yes
Meets fidelity threshold	Yes	Yes	Yes

Key Component 2: Mentor Participation in Professional Development

AK DEED expects mentors to fully participate in professional development events. We set attending at least 75 percent of scheduled sessions as our *ideal* bar for Orientation, Wrap Up, NTC Academy, and ASMP training. We used this criterion based on the amount of material covered; the importance of engaging with the material, trainers, and other mentors; and the sheer size of Alaska. It can be difficult to make up missed sessions. Therefore, missing any time during the in-person training sessions is highly discouraged.[3] We scored mentors *adequate* if they attended 50 to 74 percent of the scheduled training, and *low* if they attended less than 50 percent. We assessed the indicators for Orientation, Wrap Up, and ASMP training every year. We assessed the indicator for NTC Academy in mentors' first and second year of mentoring only.

AK DEED scheduled approximately 17 Friday Forums per year. Generally they occurred every other Friday from September through April, excluding holiday breaks. We set *ideal* attendance to participating in at least 10 sessions per year (including the in-person training during Academy week). Mentors scored *adequate* if they participated in eight to nine sessions and *low* if they participated in fewer than eight sessions. We assessed this indicator every year.

AK DEED expects coaches and mentors to communicate at least twice a month. Since this is similar to the frequency of Friday Forums, we set *ideal* participation to at least 10 monthly conversations per year. Mentors scored *adequate* if they had eight to nine months with at least one documented conversation and *low* if they had fewer than eight months with one documented conversation. We assessed this indicator every year.

AK DEED expects coaches to shadow first-year mentors twice a year and returning mentors once a year. For first-year mentors, we set *ideal* to participating in two shadowing experiences, *adequate* to participating in one shadowing experience, and *low* to not participating in any shadowing experiences. For all other mentors we set *ideal* to participating in one shadowing experiences and *low* to not participating in any shadowing experiences. We assessed this indicator every year.

[3] Mentors could, and did, make up missed trainings by meeting with their coach one-on-one to review the materials.

AK DEED expects coaches to guide mentors through a reflective process using a set of tools that includes an Individualized Learning Plan (ILP), Mid-Year Gauge (MYG), Mentor Collaborative Log, and Personal Growth Reflection (PGR). We set *ideal* implementation criteria to mentors participating in at least four reflective events with their coaches (as evidenced by four completed tools). They received a score of *adequate* if they had two or three completed tools and *low* if they had one or no completed tools. We assessed this indicator every year.

Note: Coaches collect these reflective tools and their documentation of coaching conversations and shadows in *the Mentor Accountability and Growth Assessment* (MAGA) folder. Our measurement of coaching comes almost entirely from this documentation. Missing documentation does not necessarily indicate that a coaching event did not occur, but rather that some coaches were better at documenting activities than others. Thus, variation across mentors in their participation in coaching activities may be more of a reflection of their coach's ability to document those activities.

The following nine tables detail project findings for the eight indicators included in the second key component of the UGO FOI matrix. Tables B-5 through B-12 summarize each indicator across the three years and Table B-13 summarizes findings for the component.

Table B-5. UGO FOI matrix and findings for key component 2 mentor participation in professional development: orientation

Indicator 2.1: Orientation **Operational definition:** Fully attends as scheduled **Assessed**: All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor attends less than 50 percent of scheduled orientation	30% (3)	11% (2)	6% (1)
1. Adequate: Adequate: Mentor attends 50–74 percent of scheduled orientation	0% (0)	0% (0)	0% (0)
2. Ideal: Mentor attends at least 75 percent of scheduled orientation	70% (7)	89% (16)	94% (16)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	70% (7)	89% (16	94% (16)

Sources: ASMP dashboard; researcher participation; ASMP and district coordinator reports.

Table B-6. UGO FOI matrix and findings for key component 2 mentor participation in professional development: Wrap Up

Indicator 2.2: Wrap Up **Operational definition:** Fully attends as scheduled **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor attends less than 50 percent of Wrap Up	10% (1)	6% (1)	6% (1)
1. Adequate: Mentor attends 50–74 percent of Wrap Up	0% (0)	0% (0)	0% (0)
2. Ideal: Mentor attends at least 75 percent of Wrap Up	90% (9)	94% (17)	94% (16)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	90% (9)	94% (18)	94% (16)

Source: ASMP dashboard; researcher participation; ASMP and district coordinator reports.

Table B-7. UGO FOI matrix and findings for key component 2 mentor participation in professional development: Academy

Indicator 2.3: Academy **Operational definition**: Fully attends as scheduled **Assessed:** First- and second-year mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 8)**
0. Low: Mentor attends less than 50 percent of Academy	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor attends 50–74 percent of Academy	0% (0)	0% (0)	0% (0)
2. Ideal: Mentor attends at least 75 percent of Academy	100% (10)	100% (18)	100% (8)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	100% (18)	100% (8)

Sourcse: ASMP dashboard; researcher participation; ASMP and district coordinator reports.

Table B-8. UGO FOI matrix and findings for key component 2 mentor participation in professional development: ASMP training

Indicator 2.4: ASMP training **Operational definition:** Fully attends as scheduled **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor attends less than 50 percent of ASMP training	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor attends 50–74 percent of ASMP training	0% (0)	0% (0)	0% (0)
2. Ideal: Mentor attends at least 75 percent of ASMP training	100% (10)	100% (18)	100% (17)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	100% (18)	100% (17)

Sources: ASMP dashboard; researcher participation; ASMP and district coordinator reports.

Table B-9. UGO FOI matrix and findings for key component 2 mentor participation in professional development: Friday Forums

Indicator 2.5: Friday Forums **Operational definition:** Attends at least 10 forums **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor attends 0–7 Friday Forums	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor attends 8–9 Friday Forums	0% (0)	0% (0)	0% (0)
2. Ideal: Mentor attends 10 or more Friday Forums	100% (10)	100% (18)	100% (17)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	100% (18)	100% (17)

Sources: ASMP dashboard; co-facilitator reports.

Table B-10. UGO FOI matrix and findings for key component 2 mentor participation in professional development: mentor communicates with coach (Coaching Conversations)

Indicator 2.6: At least monthly communication with ASMP coach (Coaching Conversations) **Operational definition:** 10 regularly scheduled through academic year **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor has fewer than 8 months with at least one communication	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor has 8-10 months with at least one communication	60% (6)	27% (5)	53% (9)
2. Ideal: Mentor has at least 10 months with at least one communication	40% (4)	72% (13)	47% (8)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	100% (18)	100% (17)

Source: Mentor accountability and growth assessment system (MAGA).

Table B-11. UGO FOI matrix and findings for key component 2 mentor participation in professional development: shadowing by coach

Indicator 2.7: Shadowing **Operational definition:** Twice a year (first year) and at least once a year (second year or more) **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor participates in 0 shadowing activities	0% (0)	5% (1)	6% (1)
1. Adequate: Adequate: Mentor participates in one shadowing activity (first-year mentors only)	50% (5)	6% (1)	0% (0)
2. Ideal: Mentor participates in two or more shadowing activities in the first year and one or more times in the second year and beyond	50% (5)	89% (16)	94% (16)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	95% (17)	94% (16)

Sources: Mentor accountability and growth assessment system (MAGA); interviews.

Table B-12. UGO FOI matrix and findings for key component 2 mentor participation in professional development: mentor coached using formative assessment tools by coach

Indicator 2.8: Mentor is coached using formative assessment **Operational definition:** Mentor is coached using ASMP tools for coaches **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor is coached using 0–1 ASMP tools (e.g., Individual Learning Plan (ILP), Mid-Year Growth (MYG), Collaborative Assessment Logs (CALs) or Professional Growth Reflection (PGR)	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor is coached using two to three ASMP tools	90% (9)	67% (12)	29% (5)
2. Ideal: Mentor is coached using four or more ASMP tools	10% (1)	33% (6)	71% (12)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	100% (18)	100% (17)

Source: Mentor accountability and growth assessment system (MAGA).

Table B-13. Fidelity of key component 2 mentor participation in professional development

	Year 1	Year 2	Year 3
Average percentage of mentors with a score of 1 or 2 across indicators	95%	97%	98%
Average of the eight indicators is at least 70 percent of mentors scoring 1 or 2	Yes	Yes	Yes
At Least 51 percent of mentors score 1 or 2	Yes	Yes	Yes
Meets fidelity threshold	Yes	Yes	Yes

Key Component 3: Mentor Interacts With ECTs

AK DEED expects mentors to communicate weekly with ECTS via phone, email, or Skype, for a total of approximately 28 communications between mid-September, after most hiring by districts is complete, and mid-May, when mentors participate in Wrap Up, excluding holidays and breaks. We set *ideal* to mentors having at least 22 weekly communications with at least 80 percent of their ECTs. Mentors received an *adequate* score if they had 22 weekly communications with 50 to 79 percent of their ECTs, and a *low* score if they had the same number of communications with fewer than 50 percent of their ECTs. We assessed this indicator for all mentors every year. We excluded from the calculations any ECT that we knew had taken some type of leave (e.g., medical) during the school year and, as a result, did not receive 22 weekly contacts from their mentor.

AK DEED expects mentors to engage in at least 3.5 hours of face-to-face contact with each ECT per month. We set *ideal* to mentors having at least six months throughout the year when their face-to-face interactions totaled three hours with at least 80 percent of their ECTs. Mentors received an *adequate* score if they had six months through the year when their face-to-face interactions totaled three hours with 50 to 79 percent of their ECTs. They obtained a *low* score if

they had accumulated three hours of face-to-face contact for six months with fewer than 50 percent of their ECTs. We assessed this indicator for all mentors every year. We excluded from the calculations any ECT that we knew had taken some type of leave (e.g., medical) during the school year and, as a result, did not receive six months of face-to-face visits totaling three and a half hours.

The following three tables detail project findings for the two indicators included in the third key component of the UGO FOI matrix. Tables B-14 through B-15 summarize each indicator across the three years and Table B-16 summarizes findings for the component.

Table B-14. UGO FOI matrix and findings for key component 3 mentor interacts with ECTs: weekly communication

Indicator 3.1: Weekly communication **Operational definition:** 28 per year (e.g., email, phone, Skype) with each ECT **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor has at least 22 weekly communications with fewer than 50 percent of ECTs	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor has at least 22 weekly communications with 50–79 percent of ECTs	0% (0)	0% (0)	0% (0)
2. Ideal: Mentor has at least 22 weekly communications with at least 80 percent of ECTs	100% (10)	100% (18)	100% (17)
Full-sample fidelity score Percentage of mentors with fidelity score of 1 or 2	100% (10)	100% (18)	100% (17)

Source: Contact log by calendar week.

Table B-15. UGO FOI matrix and findings for key component 3 mentor interaction with ECTs: face-to-face interactions

Indicator 3.2: Regular face-to-face interactions **Operational definition:** 3.5 hours each month in face-to-face interactions, distributed through the year with each ECT **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor has at least six months through the year when face-to-face interactions total three hours for 50 percent or more of ECTs	30% (3)	28% (5)	18% (3)
1. Adequate: Mentor has at least six months through the year when face-to-face interactions total three hours for 50–79 percent of ECTs	30% (3)	28% (5)	18% (3)
2. Ideal: Mentor has at least six months through the year when face-to-face interactions total three hours for 80 percent or more of ECTs	40% (4)	44% (8)	65% (11)
Full-sample fidelity score (Percentage of mentors with fidelity score of 1 or 2)	70% (7)	72% (13)	83% (14)

Source: Contact log by calendar week.

Table B-16. Fidelity of key component 3 mentor interacts with ECTs

	Year 1	Year 2	Year 3
Average percentage of mentors with a score of 1 or 2 across indicators	85%	86%	92%
Average of the two indicators is at least 70 percent of mentors scoring 1 or 2	Yes	Yes	Yes
At least 51 percent of mentors score 1 or 2	Yes	Yes	Yes
Meets fidelity threshold	Yes	Yes	Yes

Key Component 4: Mentor Use of Formative Assessment with ECTs

AK DEED expects mentors to document their weekly contacts with ECTs using the Collaborative Assessment Log (CALs). We set *ideal* mentors having at least 22 completed CALs in at least 80 percent of their ECTs' folders. Mentors received an *adequate* score if they had 22 completed CALs in 50 to 79 percent of their ECTs folders and a *low* score if they had the same number of completed CALs in less than 50 percent of their ECTs folders. In assessing this indicator, we reviewed all mentors' ECT folders each year. We considered CALs completed if mentors completed two of the four quadrants on the form. Again, we excluded from the calculations any ECT that we knew had taken some type of leave (e.g., medical) during the school year and, as a result, did not have 22 completed CALs in their folder.

AK DEED expects mentors to use a variety of NTC/ASMP formative assessment tools with their ECTs. We set *ideal* to mentors having used at least four tools across the two semesters (e.g., one tool in fall and three in spring or two in fall and two in spring) with at least 80 percent of their ECTs. Mentors received an *adequate* score if they used four tools across the two semesters with 50 to 79 percent of their ECTs and a *low* score if they used the same number with less than 50 percent of their ECTs. In assessing this indicator, we reviewed all mentors' ECT folders each year. We counted any tool documented in folders (e.g., a seating chart drawn on a scrap of paper that was not a formal data collection tool) and allowed multiple uses of the same tool to count as multiple instances of tool use. Again, we excluded from the calculations any ECT that we knew had taken some type of leave (e.g., medical) during the school year and, as a result, did not have four tools used across two semesters.

AK DEED expects mentors to guide ECTs through a reflective process using a set of tools comprised of an Individualized Learning Plan (ILP), Mid-Year Gauge (MYG), and Personal Growth Reflection (PGR). We set *ideal* implementation criteria to mentors using an ILP and at least one additional reflective practice tool with at least 80 percent of their ECTs. Mentors received an *adequate* score if they used the ILP and at least one additional tool with 50 to 79 percent of their ECTs; they scored *low* if they used they used only the ILP or the ILP and at least one other tool with less than 50 percent of their ECTs. In assessing this indicator, we reviewed ECT folders every year. Again, we excluded from the calculations any ECT that we knew had taken some type of leave (e.g., medical) during the school year and, as a result, did not have the ILP and/or other reflective practice tools documented in their folder.

The following four tables detail project findings for the three indicators included in the fourth key component of the UGO FOI matrix. Tables B-17 through B-19 summarize each indicator across the three years and Table B-20 summarizes findings for the component.

Table B-17. UGO FOI matrix and findings for key component 4 mentor use of formative assessment with ECTs: collaborative assessment logs

Indicator 4.1: Collaborative Assessment Logs (CALs) **Operational definition:** 28 CALs used per year with each ECT **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor has completed at least 22 CALs each with fewer than 50 percent of ECTs	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor has completed at least 22 CALS each with 50–79 percent of ECTs	0% (0)	0% (0)	0% (0)
2. Ideal: Mentor has completed at least 22 CALs each with 80 percent or more of ECTs	100% (10)	100% (18)	100% (17)
Full-sample fidelity score (Percentage of mentors with fidelity score of 1 or 2)	100% (10)	100% (18)	100% (17)

Source: Mentor folders on each ECT.

Table B-18. UGO FOI matrix and findings for key component 4 mentor use of formative assessment with ECTs: various tools

Indicator 4.2: Various formative assessment tools regularly used to collect data **Operational definition:** Uses a variety of formative assessment tools/ strategies with ECTs during the year (in addition to the CAL) with each ECT **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor uses at least four tools each, across both semesters, with fewer than 50 percent of ECTs	40% (4)	22% (4)	18% (3)
1. Adequate: Mentor uses at least four tools each, across both semesters, with 50–79 percent of ECTs	10% (1)	17% (3)	35% (6)
2. Ideal: Mentor uses at least four tools each, across both semesters, with 80 percent or more of ECTs	50% (5)	61% (11)	47% (8)
Full-sample fidelity score (Percentage of mentors with fidelity score of 1 or 2)	60% (6)	78% (14)	82% (14)

Source: Mentor folders on each ECT.

Table B-19. UGO FOI matrix and findings for key component 4 mentor use of formative assessment with ECTs: reflective practice tools

Indicator 4.3: Reflective Practice **Operational definition:** Individual Learning Plan (ILP), Mid-Year Review, and Professional Growth Reflection used with each ECT **Assessed:** All mentors	**Percentage (n)** **Y1, 2012-13 (n = 10)**	**Y2, 2013-14 (n = 18)**	**Y3, 2014-15 (n = 17)**
0. Low: Mentor uses no reflective practice tools, only ILP or ILP and at least one other tool with fewer than 50 percent of ECTs	0% (0)	0% (0)	0% (0)
1. Adequate: Mentor uses ILP and at least one additional reflective practice tool each with 50–79 percent of ECTs	0% (0)	6% (1)	0% (0)
2. Ideal: Mentor uses ILP and at least one additional reflective practice tool each with 80 percent or more of ECTs	100% (10)	94% (17)	100% (17)
Full-sample fidelity score (Percentage of mentors with fidelity score of 1 or 2)	100% (10)	100% (18)	100% (17)

Source: Mentor folders on each ECT.

Table B-20. Fidelity of key component 4 mentor use of formative assessment with ECTs

	Year 1	Year 2	Year 3
Average percentage of mentors with a score of 1 or 2 across indicators	87%	93%	94%
Average of the three indicators is at least 70 percent of mentors scoring 1 or 2	Yes	Yes	Yes
At least 51 percent of mentors score 1 or 2	Yes	Yes	Yes
Meets fidelity threshold	Yes	Yes	Yes

Appendix C. Fidelity of Implementation Matrix and Findings by Component and Year

This document shows Fidelity of Implementation (FOI) tables and results summarized by component and year. This information was requested by the NEi3 evaluation.

Table C-1. Description of key components

Planned intervention activity	List of key indicators for each key component
Mentor recruitment/assignment	1. AK teaching experience (first-year mentors only) 2. Mentoring time (all mentors every year) 3. Caseload (all mentors every year)
Mentor participation in professional development	1. Orientation (all mentors every year) 2. Wrap Up (all mentors every year) 3. Academy (first- and second-year mentors only) 4. ASMP training (all mentors every year) 5. Friday forums (all mentors every year) 6. Communication with ASMP coach (all mentors every year) 7. Shadowed by coach (all mentors every year) 8. Coached using formative assessment system (FAS) (all mentors every year)
Mentor interaction with early career teachers (ECTs)	1. Weekly communication (all mentors every year) 2. Face-to-face interactions (all mentors every year)
Mentor use of formative assessment tools with ECTs	1. Collaborative Assessment Logs (CALs) (all mentors every year) 2. Various FAS/ASMP and other tools (all mentors every year) 3. Reflective practice tools (all mentors every year)

Table C-2. Findings from evaluator study of implementation: Implementation Year 1 (August 2012–May 2013)

Intervention components	Implementation measure	Sample size	Representative-ness	Component level threshold for FOI	Criteria for implemented with fidelity	Component level fidelity score	Implemented with fidelity
Mentor recruitment/ assignment	3	10	All	Mentors: 1. Have eight years teaching in AK 2. Are fully released from teaching 3. Have caseloads of 12–15 ECTs (1.0 FTE)	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	100 percent of mentors had average scores of at least *adequate*, and 100 percent of mentors scored at least *adequate* for each indicator	Yes
Mentor participation in professional development	8	10	All	1. Orientation: fully attend as scheduled 2. Wrap Up: fully attend as scheduled 3. Academy: first- and second-year mentors fully attend as scheduled 4. ASMP: fully attend as scheduled 5. Friday Forums: attend at least 10 6. Communication with ASMP coach: at least 10 throughout academic year 7. Shadowed by coach: first-year mentors, two per year; second-year (or more) mentors, at least one per year 8. Coached using FAS: at least four tools used	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	95 percent of mentors had average scores of at least *adequate*, and 70 percent of mentors scored at least *adequate* for each indicator	Yes

Intervention components	Implementation measure	Sample size	Representative-ness	Component level threshold for FOI	Criteria for implemented with fidelity	Component level fidelity score	Implemented with fidelity
Mentor interaction with ECTs	2	10	All (A)	1. Weekly communication, 28 per year 2. Face-to-face interactions, 3.5 hours per month	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	85 percent of mentors had average scores of at least *adequate*, and 70 percent of mentors scored at least *adequate* for each indicator	Yes
Mentors use of formative assessment tools with ECTs	3	10	All (A)	1. Collaborative Assessment Log, 28 per year 2. Various formative assessment tools, at least four tools used across both semesters with at least 80 percent of ECTs 3. Reflective practice tools, ILP and at least one additional tool used with at least 80 percent of ECTs	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	80 percent of mentors had average scores of at least *adequate*, and 60 percent of mentors scored at least *adequate* for each indicator	Yes

Table C-3. NEi3 findings from evaluator study of implementation: Implementation Year 2 (August 2013–May 2014)

Intervention components	Implementation measure	Sample size	Representative-ness	Component level threshold for FOI	Criteria for implemented with fidelity	Component level fidelity score	Implemented with fidelity
Mentor recruitment/ assignment	3	9 18 18	All	Mentors: 1. Have eight years teaching in Alaska 2. Are fully released from teaching 3. Have caseloads of 12–15 ECTs (1.0 FTE)	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	96 percent of mentors had average scores of at least *adequate*, and 89 percent of mentors scored at least *adequate* for each indicator	Yes
Mentor participation in professional development	8	18	All	1. Orientation: fully attend as scheduled 2. Wrap Up: fully attend as scheduled 3. Academy: First- and second-year mentors fully attend as scheduled 4. ASMP: fully attend as scheduled 5. Friday Forums: attend at least 10 6. Communication with ASMP coach: at least 10 throughout academic year 7. Shadowed by coach: first year mentors, two per year; second year or more mentors, at least one per year 8. Coached using formative assessment	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	97 percent of mentors had average scores of at least *adequate*, and 89 percent of mentors scored at least *adequate* for each indicator	Yes

Intervention components	Implementation measure	Sample size	Representative-ness	Component level threshold for FOI	Criteria for implemented with fidelity	Component level fidelity score	Implemented with fidelity
				tools: at least four tools used			
Mentor interaction with ECTs	2	18	All (A)	1. Weekly communication, 28 per year 2. Face-to-face interactions, 3.5 hours per month	70 percent of mentors had an average of at least "1" across all indicators, and at least 51percent of mentors scored "1" on each indictor"	86 percent of mentors had average scores of at least *adequate,* and 72 percent of mentors scored at least *Adequate* for each indicator	Yes
Mentors use of formative assessment tools with ECTs	3	18	All (A)	1. CALs, 28 per year 2. Various formative assessment tools, at least four tools used across both semesters with at least 80 percent of ECTs 3. Reflective practice tools, ILP and at least one additional tool used with at least 80 percent of ECTs	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	93 percent of mentors had average scores of at least *adequate*, and 78 percent of mentors scored at least *adequate* for each indicator	Yes

Table C-4. NEi3 findings from evaluator study of implementation: Implementation Year 3 (August 2014–May 2015)

Intervention components	Implementation measure	Sample size	Representative-ness	Component level threshold for FOI	Criteria for implemented with fidelity	Component level fidelity score	Implemented with fidelity
Mentor recruitment/ assignment	3	2 17 17	All	Mentors: 1. Have eight years teaching in Alaska 2. Are fully released from teaching 3. Have caseloads of 12–15 ECTs (1.0 FTE)	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	96 percent of mentors had average scores of at least *adequate,* and 88 percent of mentors scored at least *adequate* for each indicator	Yes
Mentor participation in professional development	8	17 17 8 17 17 17 17 17	All	1. Orientation: fully attend as scheduled 2. Wrap Up: fully attend as scheduled 3. Academy: first- and second-year mentors fully attend as scheduled 4. ASMP: fully attend as scheduled 5. Friday Forums: attend at least 10 6. Communication with ASMP coach: at least 10 throughout academic year 7. Shadowed by coach: first-year mentors, two per year; second-year (or more) mentors, at least one per year 8. Coached using formative assessment tools	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	98 percent of mentors had average scores of at least *adequate*, and 94 percent of mentors scored at least *adequate* for each indicator	Yes

Intervention components	Implementation measure	Sample size	Representative-ness	Component level threshold for FOI	Criteria for implemented with fidelity	Component level fidelity score	Implemented with fidelity
				at least four tools used			
Mentor interaction with ECTs	2	17	All (A)	1. Weekly communication, 28 per year 2. Face-to-face interactions, 3.5 hours per month	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	92 percent of mentors had average scores of at least a*dequate*, and 83 percent of mentors scored at least *adequate* for each indicator	Yes
Mentors use of formative assessment tools with ECTs	3	17	All (A)	1. CALs, 28 per year 2. Various formative assessment tools, at least four tools used across both semesters with at least 80 percent of ECTs 3. Reflective practice tools, ILP and at least one additional tool used with at least 80 percent of ECTs	70 percent of mentors had an average of at least "1" across all indicators, and at least 51 percent of mentors scored "1" on each indictor"	94 percent of mentors had average scores of at least *adequate*, and 82 percent of mentors scored at least *adequate* for each indicator	Yes

Appendix D. UGO Consort Charts for All Contrasts

Acronyms

ASD	Anchorage School District
ATI	Alaska Teacher Identifier
C1, C2, C3	Cohort 1, Cohort 2, Cohort 3
DOD	Department of Defense
ECT	Early Career Teacher
PE	Physical Education
SPED	Special Education
Y1, Y2	Year 1, Year 2

Consort Charts for Teacher Attrition

Outcome Aa, Contrast 1, Teacher Attrition (all cohorts pooled, confirmatory)

	All Cohorts	
ECTs initially considered for recruitment	605	
Determined to be ineligible for study	25	
Approached for consent	580	
Declined	24	
ECTs consented and randomly assigned	556	
	Treatment	Control
Began study beginning of Y1	286	270
Determined to be ineligible for study		1
Eligible for Outcome A, Contrast 1, Teacher Attrition	286	269
Total Missing Outcome Data	19	17
Missing ATI	1	1
Missing Outcome Data	8	8
Dropped from Model	10	8
Estimation Sample	267	252
Attrition	6.6	6.3
Differential Attrition	0.3%	
Overall Attrition	6.5%	

Outcome Ab, Contrast 1, Teacher Attrition (Cohort 1 only, exploratory)

	Cohort 1	
Cohort 1 ECTs initially considered for recruitment	205	
Determined to be ineligible for study	25	
Approached for consent	180	
Declined	24	
Cohort 1 ECTs consented and randomly assigned	156	
	Treatment	Control
Began Study Beginning of Y1	83	73
Determined to be ineligible for study		
Eligible for Outcome A, Contrast 1, Teacher Attrition	83	73
Total Missing Outcome Data		
Missing ATI		
Missing Outcome Data		
Dropped from Model		
Estimation Sample	77	70
Attrition		
Differential Attrition		
Overall Attrition		

Consort Charts for Instructional Practice

Outcome Ba, Contrast 1, Emotional Support (Year 2, Cohorts 2 and 3 pooled, confirmatory)
Outcome Ca, Contrast 1, Classroom Organization (Year 2, Cohorts 2 and 3 pooled, confirmatory)
Outcome Da, Contrast 1, Instructional Support (Year 2, Cohorts 2 and 3 pooled, confirmatory)

	Cohorts 2 & 3	
	Treatment	Control
ECTs randomly assigned to instructional recordings prior to applying a priori exclusion criteria	91	86
Total Excluded A Priori	20	22
PreK ECTs	9	3
ECTs providing instruction in language other than English or Spanish	1	5
DOD base ECTs (in ASD)	2	3
SPED teachers (in ASD)	7	10
Baseline video not scorable (technical difficulties)	2	1
ECTs randomly assigned, with replacement, to instructional recording with scorable baseline recordings, Fall Y1	70	64
Total ECTs missing Year 2 outcome data	19	18
Dropped before Y2 (did not want to be videotaped, grant funded through not renewed, left district/moved out of state, non-retained (district reasons), resigned)	8	9
Transferred to special population (Y2 or C3) (juvenile justice, expelled, special education, religion, mixed student/adult classroom, PE, DOD school)	8	8
Error	1	0
Opted out of video recordings after consenting	1	1
Maternity leave	0	1
Could not attribute score to ECT	1	0
Estimation Sample	51	46
Attrition	27.1%	28.1%
Overall Attrition	27.6%	
Differential Attrition	1.0%	

Outcome Bb, Contrast 1, Emotional Support (Year 1, Cohorts 2 and 3 pooled, exploratory)
Outcome Cb, Contrast 1, Classroom Organization (Year 1, Cohorts 2 and 3 pooled, exploratory)
Outcome Db, Contrast 1, Instructional Support (Year 1, Cohorts 2 and 3 pooled, exploratory)

	Cohorts **2 & 3**	
	Treatment	Control
ECTs randomly assigned to instructional recordings prior to applying a priori exclusion criteria	91	86
Total Excluded A Priori	20	22
PreK ECTs	9	3
ECTs providing instruction in language other than English or Spanish	1	5
DOD base ECTs (in ASD)	2	3
SPED teachers (in ASD)	7	10
Baseline video not scorable (technical difficulties)	2	1
ECTs randomly assigned, with replacement, to instructional recording with scorable baseline recordings, Fall Y1 (Eligible for Outcomes BCD)	70	64
Total ECTs missing Year 1 outcome data	18	19
Not recorded in Year 2, and Y1 videos not sent for scoring (dropped after Y1, moved into non-recordable classroom, maternity leave)	13	15
Error	1	1
Opted out of video recordings after consenting	1	1
Dropped study during Y1	2	1
Spring Y1 videos not scorable	0	1
Could not attribute score to ECT	1	0
Estimation Sample	52	45
Attrition	25.7%	29.7%
Overall Attrition	27.6%	
Differential Attrition	4.0%	

Consort Charts for Student Achievement

Outcome Ea, Student Reading Primary Grades Y2 (Cohorts 1 and 2 pooled, confirmatory)

	Cohorts 1 & 2[4]	
	Treatment	Control
Level of Random Assignment		
Y2 ECTs with students in grades 4-6 eligible for state reading assessment	26	23
Y2 ECTs Dropped During Y2	0	0
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Y2 ECTs with student rosters collected in spring	26	23
Students on Y2, October 1 roster	549	472
Students on Y2, October 1 roster with state reading assessment data next spring	527	453
Students missing covariates	41	20
Estimation sample	486	433
Attrition	11.5%	8.3%
Differential Attrition	3.2%	
Overall Attrition	10.0%	

Outcome Eb, Contrast 1, Student Reading Primary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with students in grades 4-6 eligible for state reading assessment	34	33
Y1 ECTs Dropped During Y1	0	0
Y1 ECTs with student rosters collected in spring	34	33
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student Level		
Students on Y1, October 1 roster	673	633
Students on Y1, October 1 roster with state reading assessment data next spring	653	606
Students missing covariates	65	30
Estimation Sample	588	576
Attrition	12.6%	9.0%
Differential Attrition	3.6%	
Overall Attrition	10.9%	

[4] Cohort 3 is excluded because the state assessment was not administered in spring 2016.

Outcome Fa, Student Writing Primary Grades Y2 (Cohorts 1 and 2 pooled, confirmatory)

	Cohorts 1 & 2[5]	
	Treatment	Control
Level of Random Assignment		
Y2 ECTs with students in grades 4-6 eligible for state writing assessment	25	23
Y2 ECTs Dropped During Y2	0	0
Y2 ECTs with student rosters collected in spring	25	23
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Students on Y2, October 1 roster	513	499
Students on Y2, October 1 roster with state writing assessment data next spring	495	465
Students missing covariates	39	19
Estimation sample	456	446
Attrition	11.1%	10.6%
Differential Attrition	0.5%	
Overall Attrition	10.9%	

Outcome Fb, Student Writing Primary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with students in grades 4-6 eligible for state writing assessment	39	33
Y1 Dropped Study During Y1	0	0
Y1 ECTs with student rosters collected in spring	39	33
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Students on Y1, October 1 roster	1,009	659
Students on Y1, October 1 roster with state writing assessment data next spring	977	634
Students missing covariates	76	29
Estimation sample	901	605
Attrition	10.7%	8.2%
Differential Attrition	2.5%	
Overall Attrition	9.7%	

[5] Cohort 3 is excluded because the state assessment was not administered in spring 2016.

Outcome Ga, Student Math Primary Grades Y2 (Cohorts 1 and 2 pooled, confirmatory)

	Cohorts 1 & 2[6]	
	Treatment	Control
Level of Random Assignment		
Y2 ECTs with students in grades 4-6 eligible for state math assessment	27	22
Y2 ECTs Dropped During Y2	0	0
Y2 ECTs with student rosters collected in spring	27	22
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Students on Y2, October 1 roster	630	443
Students on Y2, October 1 roster with state math assessment data next spring	610	409
Students missing covariates	44	21
Estimation sample	566	388
Attrition	10.2%	12.4%
Differential Attrition	2.2%	
Overall Attrition	11.1%	

Outcome Gb, Student Math Primary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with students in grades 4-6 eligible for state math assessment	36	34
Y1 ECTs Dropped During Y1	0	0
Y1 ECTs with student rosters collected in spring	36	34
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Students on Y1, October 1 roster	677	650
Students on Y1, October 1 roster with state math assessment data next spring	654	626
Students missing covariates	60	46
Estimation sample	594	580
Attrition	12.2%	10.8%
Differential Attrition	1.4%	
Overall Attrition	11.5%	

[6] Cohort 3 is excluded because the state assessment was not administered in spring 2016.

Outcome Gc, Student Math Secondary Grades Y2 (Cohorts 1 and 2 pooled, confirmatory)

	Cohorts 1 & 2[7]	
	Treatment	Control
Level of Random Assignment		
Y2 ECTs with students in grades 7-10 eligible for state math assessment	18	12
Y2 ECTs Dropped During Y2	0	0
Y2 ECTs with student rosters collected in spring	18	12
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Students on Y2, October 1 roster	809	648
Students on Y2, October 1 roster with state math assessment data next spring	755	615
Students missing covariates	59	35
Estimation Sample	696	580
Attrition	14.0%	10.5%
Differential Attrition	3.5%	
Overall Attrition	12.4%	

Outcome Gd, Student Math Secondary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with students in grades 7-10 eligible for state math assessment	26	26
Y1 ECTs Dropped During Y1	0	0
Y1 ECTs with student rosters collected in spring	25	26
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Students on Y1, October 1 roster	1,558	1,463
Students on Y1, October 1 roster with state math assessment data next spring	1,457	1,369
Missing covariates	102	93
Estimation sample	1,355	1,276
Attrition	13.0%	12.8%
Differential Attrition	0.2%	
Overall Attrition	12.9%	

[7] Cohort 3 is excluded because the state assessment was not administered in spring 2016.

Outcome Ha, Caucasian Student Math Secondary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with Caucasian students in grades 7-10 eligible for state math assessment	26	25
Y1 ECTs with Caucasian students Dropped During Y1	0	0
Y1 ECTs with with Caucasian students on rosters collected in spring	25	25
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Caucasian students on Y1, October 1 roster	806	699
Caucasian students on Y1, October 1 roster with state math assessment data next spring	760	666
Caucasian students missing covariates	54	53
Estimation Sample	710	613
Attrition	11.9%	12.3%
Differential Attrition	0.4%	
Overall Attrition	12.1%	

Outcome I, Hispanic Student Math Secondary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with Hispanic students in grades 7-10 eligible for state math assessment	22	23
Y1 ECTs with Hispanic students Dropped During Y1	0	0
Y1 ECTs with Hispanic students on rosters collected in spring	22	23
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Hispanic students on Y1, October 1 roster	180	133
Hispanic students on Y1, October 1 roster with state math assessment data next spring	170	125
Hispanic students missing covariates	10	11
Estimation Sample	149	114
Attrition	17.2%	14.3%
Differential Attrition	2.9%	
Overall Attrition	15.9%	

Outcome J, Alaska Native Student Math Secondary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with Alaskan Native students in grades 7-10 eligible for state math assessment	24	25
Y1 ECTs with Alaskan Native students Dropped During Y1	0	0
Y1 ECTs with Alaskan Native students on rosters collected in spring	24	25
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Alaskan Native students on Y1, October 1 roster	157	165
Alaskan Native students on Y1, October 1 roster with state math assessment data next spring	140	154
Alaskan Native students missing covariates	2	8
Estimation Sample	138	146
Attrition	12.1%	11.5%
Differential Attrition	0.6%	
Overall Attrition	11.8%	

Outcome K, American Indian Student Math Secondary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Trx	Ctr
Level of Random Assignment		
Y1 ECTs with American Indian students in grades 7-10 eligible for state math assessment	8	7
Y1 ECTs with American Indian students Dropped During Y1	0	0
Y1 ECTs with American Indian students on rosters collected in spring	8	7
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
American Indian students on Y1, October 1 roster	12	16
American Indian students on Y1, October 1 roster with state math assessment data next spring	10	15
American Indian students missing covariates	2	1
Error		1
Estimation Sample	10	13
Attrition	16.7%	18.8%
Differential Attrition	2.1%	
Overall Attrition	17.9%	

Outcome L, Two or More Races Student Math Secondary Grades Y1 (All cohorts pooled, exploratory)

	All Cohorts	
	Treatment	Control
Level of Random Assignment		
Y1 ECTs with Two or More Races students in grades 7-10 eligible for state math assessment	21	21
Y1 ECTs with Two or More Races students Dropped During Y1	0	0
Y1 ECTs with Two or More Races students on rosters collected in spring	21	21
Attrition	0%	0%
Differential Attrition	0%	
Overall Attrition	0%	
Student-level		
Two or More Races students on Y1, October 1 roster	115	130
Two or More Races students on Y1, October 1 roster with state math assessment data next spring	109	129
Two or More Races students missing covariates	9	12
Estimation Sample	100	117
Attrition	13.0%	10.0%
Differential Attrition	3.0%	
Overall Attrition	11.4%	

Outcome M, Districts without Formal Mentoring Programs Student Reading Primary Grades Y1 (All cohorts pooled, exploratory)

	All cohorts	
	Treatment	Control
Level of random assignment		
Y1 ECTs in districts without formal mentoring programs with students in grades 4-6 eligible for state reading assessment	15	12
Y1 ECTs in districts without formal mentoring programs with students in grades 4-6 eligible for state reading assessment who dropped during Y1	0	0
Y1 ECTs in districts without formal mentoring programs with students in grades 4-6 eligible for state reading assessment on rosters collected in spring	15	12
Attrition	0%	0%
Differential attrition	0%	
Overall attrition	0%	
Student-level		
Students in districts without formal mentoring programs on Y1, October 1 roster	272	262
Students in districts without formal mentoring programs on Y1, October 1 roster with state reading assessment data next spring	267	253
Students in districts without formal mentoring programs missing covariates	16	15
Estimation Sample	251	238
Attrition	7.7%	9.2%
Differential Attrition	1.5%	
Overall Attrition	8.4%	